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OFFICIAL ORGAN OF THE NORTHWEST FRUIT GROWERS ASSOCIATION

VOLUME FOUR

NUMBER TWELVE

10 ^{CENTS}
A COPY DOLLAR A YEAR

BETTER FRUIT

JUNE 1910

SMALL FRUITS EDITION



THE LORD MIGHT HAVE MADE A BETTER THING THAN THE STRAWBERRY
BUT HE DIDN'T

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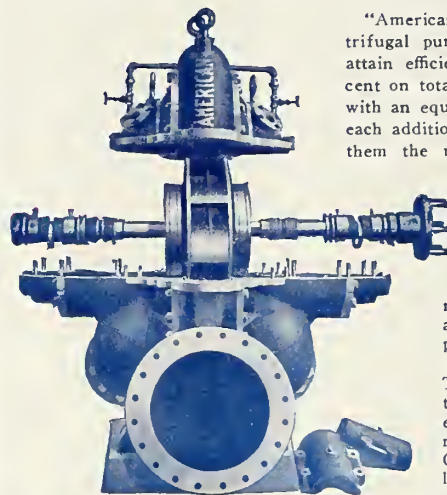
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At \$80 per acre.

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Apples, Pears, Peaches, Cherries,
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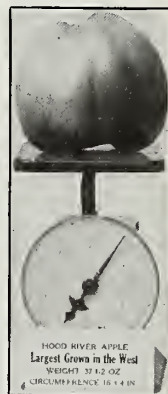
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A Strong House—Pioneer Dealer of
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Ninety-five acres; adjoins corporation line beautiful town in famous Shenandoah Valley, Virginia. Best social conditions right at hand; schools, churches, banks, stores walking distance; 2,000 feet elevation. Large, handsomely finished, modern residence; bath, telephone, etc. Large barns and silo. Never-failing streams and springs clear water. Highest grade apples grown; high prices obtained. Adapted to fruit, dairying and general farming, and affords lovely home. Owner met with accident; must sell; \$7,500; easy terms.

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In Washington, nestling under far-famed Mount Adams, in the apple belt between Mounts Hood and Adams. Trout Lake Valley is only 75 miles from Portland and only 25 miles from the Columbia River. Elevation 1,900 feet; ideal for fruit. Free water for irrigation; though irrigation is not needed, limitless water is present. Lands from \$25 to \$125 per acre. Some of the \$100 and \$125 land includes completed irrigation and other improvements. No water fees. Soil and scenery—the best of both. Mild winters and summers. Climate is famed for its salubrity. Is tourist resort. For booklet address

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For Sale—White Salmon Apple Land

There is nothing better than White Salmon. This new district just opposite Hood River has a wonderful future. It is so new that you can get in on the ground floor and be in the finest location in all the West. We have for sale 160 acres of the finest apple land in the White Salmon Valley; lays extra well, soil the very best, near railroad station. Price \$100 per acre for the whole tract, or in forty-acre tracts at a slight advance. Part cash; balance terms. Address owners,

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is now open for settlement at Fort Stockton, Tex. Richest soil in Pecos Valley, limestone formation, (no gyp) natural flow of pure spring water exceeding 55,000,000 gallons per day for irrigation and domestic use; irrigation system completed and in full operation now; no waiting for water; assured profits of \$100 to \$1,000 per acre, no drought; no crop failures; finest all year round climate in the United States; altitude 3,050 feet above sea level.

**Natural Location for Largest
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Fort Stockton is county seat of Pecos County and important division point on the Kansas City, Mexico and Orient Railway, now under construction. Has 36,000 acres of the finest irrigated land the sun shines on; adjacent to town. Population now 1,000, will soon be a city of from 10,000 to 15,000. Greater opportunities for homeseekers and investors than were offered in the older irrigated districts, where orchards are valued at from \$2,000 to \$5,000 per acre. Those who have investigated irrigated districts of New Mexico, Colorado, Utah, California, Oregon, Washington, Idaho, etc., say this is the finest body of irrigated land they ever saw.

This is one irrigation project where the water supply has not varied in 50 years; where every drop of water used for irrigation is good to drink and where there is water in abundance for every acre of land that is irrigable. Choice locations open to those who investigate now. You cannot afford to buy land anywhere without seeing Fort Stockton. Low rate excursions the first and third Tuesdays of each month. Write for full particulars today.

REFERENCES: First National Bank, Kansas City, Mo., 1st State Bank, Fort Stockton, Tex. Prospectus, map and illustrated folder describing these lands mailed free to all who address

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First class irrigated apple lands for sale at \$100.00 per acre and up

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THE HOME OF THE PERFECT JONATHAN

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A land wonderfully favored in climate, soil and environment. Apples and all tree fruits grow to perfection without irrigation. Lands for wheat raising, hay and dairy farms. Also for small fruits.

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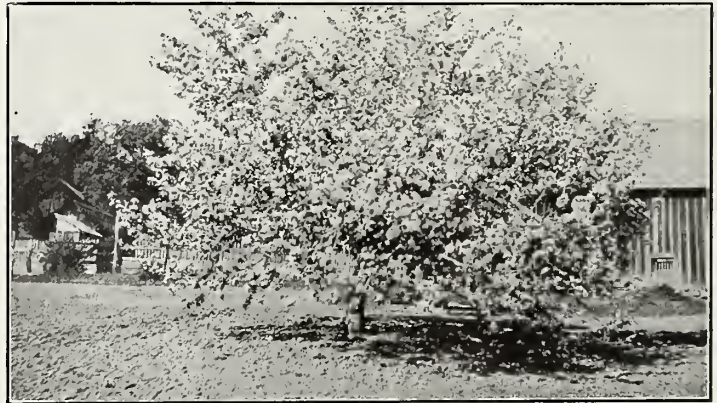
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Across the Columbia from the famous Hood River, Oregon, orchards. Apples, pears, peaches, without irrigation. Unsurpassed soil, climate and scenery. Also wheat land and stock ranches. Write or call on

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ITS LANDS offer safe and profitable investment; none have invested in these lands without profit; the upward trend must continue, as good apple land is limited; ten acres of bearing apples is a fortune; a fruit failure in this section is unknown. We make a specialty of orchard sites and can locate you right. Write for list.

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40 acres, \$4,000; 3 acres of trees, Spitzenbergs and Newtowns, 3 and 4 years old; will bear some fruit this year. Five acres under cultivation; ten acres easily cleared; small buildings; pure water; best air and water drainage.

Ask for complete list.

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First-Class Orchard Land

can still be bought in this famous fruit section for

\$75.00 Per Acre

Think what this means to you. Positively the best investments in the fruit business today

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PER ACRE NET

\$1000



MOSIER APPLES AT HOOD RIVER FAIR

This is not an unusual profit for producing apple orchards in Oregon. It is a perfectly possible profit for any man of persistence and common sense who will select land in a proven apple district in Oregon and develop it properly. If you are at all interested in fruit growing we advise you to investigate the Mosier Valley. This valley adjoins the famous Hood River Valley and is properly a part of it so far as the character of the soil and the quality of the fruit produced is concerned. We claim that the apples produced in Mosier Valley are second to none and that there is no section anywhere which offers the fruit grower a greater opportunity. Land in the Mosier Valley can be obtained for very low prices, and can be cleared with comparatively little effort. These lands can be made to increase in value from 100 to 500 per cent in two years by clearing and planting trees. We invite the most careful and critical inspection of Mosier Valley, confident of the outcome. *For full particulars about this Valley address*

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MOSIER, OREGON

MOSIER

BARGAIN

MOSIER is six miles from Hood River and has the same climate and soil.

MOSIER and Hood River apples bring the highest prices.

MOSIER district has natural air and water drainage.

MOSIER has splendid transportation facilities.

MOSIER Fruit Growers' Association markets the crops.

MOSIER Valley Bank is owned by the MOSIER people.

MOSIER Telephone Company is owned by the people and connects valley and town.

MOSIER is a rapidly growing district, but good land is still cheap.

15 acres, 6 miles from Mosier, on fine road; 2 acres cleared; small family orchard in bearing; 6-room house, large barn, large shed, cellar, chicken house and other improvements; good well with 33 feet of water, and spring. Best view in the Mosier country. Price \$2,200; \$800 cash and balance \$100 a year at 6 per cent.

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I have large and small tracts of improved and unimproved land in this vicinity, ranging in value from \$40 to \$100 an acre for unimproved and from \$250 to \$500 an acre for improved. Give me some idea as to what you are looking for and I will mail description and prices. Ask for booklet.

D. D. HAIL, REAL ESTATE, MOSIER, OREGON

White Salmon Valley

WASHINGTON

Across the river from Hood River Valley, Oregon in the Banner Apple Belt of the World



The WHITE SALMON VALLEY today presents OPPORTUNITIES FOR INVESTMENT beyond that of any other FRUIT REGION in the Northwest. It is the north half of a LARGE VALLEY lying between Mount Adams on the north and Mount Hood on the south. The mighty Columbia flows between and divides this valley. From the Columbia River to Mount Hood forms the Hood River Valley, and from the Columbia River to Mount Adams forms the White Salmon Valley. Both these mountains are snowed all the year and influence the climatic conditions. This, together with a volcanic ash soil, produces apples that are superior to all others in the world in FLAVOR, SIZE, COLOR, and, most important of all, KEEPING AND SHIPPING QUALITIES.

Ninety per cent of the fruit grown in this valley is exported, bringing the highest market prices.

THE CLIMATE of this region is ideal. It is located in the midst of the CASCADES, with a pure mountain air and free from excessive rains or drouth. The snow-covered peaks at either end of the valley temper the heat of summer and make the summer nights cool and invigorating. The winters are as a rule mild and short. The scenery is as fine as may be found anywhere on the continent.

The valley has been held back heretofore through lack of railroad transportation, but the SPOKANE, PORTLAND & SEATTLE RAILROAD, part of the Hill system, now in operation, gives this valley the best of shipping facilities.

NOW IS THE TIME TO SECURE A CHOICE ORCHARD TRACT AT A LOW FIGURE. Write today for particulars of this wonderful valley to the

WHITE SALMON VALLEY DEVELOPMENT LEAGUE

White Salmon, Washington

White Salmon Valley Lands

Orchard, Farm and Timber Tracts

Situated in the famous White Salmon Valley, directly opposite the Hood River Valley, seventy-five miles east of Portland, twenty-five miles east of the Cascade Divide, on the beautiful Columbia River. Half way between Mount Hood on the south and Mount Adams on the North.

One of the few districts where good orchard lands may still be bought at reasonable prices.

We list no land that we have not personally examined, therefore guarantee every tract as represented, also furnish abstract up to date with every sale.

In the following list are some of the most desirable tracts for sale in this district.

526—6 acres, located in the city limits of White Salmon; an ideal site with a fine view; $3\frac{1}{4}$ acres all cleared and set to fruit trees, with strawberries between the rows; deep red shot soil; all good fruit land except one-half acre, which would make a desirable building site. Price \$3,000; half cash, balance 2 years 8 per cent.

524—10 acres, 10 minutes' walk from the post office; outside of the city limits of White Salmon; nearly level, but enough slope for good drainage; spring water most of the year; all fenced. This is one of the most desirable tracts in this vicinity for one wishing a home practically in town. Similar land to this located within 3 miles of White Salmon averages over \$300 net per acre from strawberries. This is a bargain at \$325 per acre; half cash, balance 3 years 8 per cent.

W34—80 acres, 45 of which is good apple land, 35 rolling deep red shot soil; elevation 1,400 feet; 50 acres easily cleared; spring water; $2\frac{1}{2}$ miles from Husum; 8 miles from railroad station on North Bank Railroad. A snap at \$25 per acre, cash.

Space does not allow publishing our entire list, ranging in price from \$25 an acre up; the above numbers are a few of our best values this month. Would advise any one contemplating purchasing a tract of orchard land to do so before prices advance.

550—20 acres, 2 miles from White Salmon; 700 Spitzenberg and Yellow Newtowns in orchard; 10 acres under plow; 3 acres in strawberries, bearing this season; beautiful view of Mount Hood and Columbia River; no waste land; house and well on place. Ranch adjoining sold for \$20,000. For quick sale, price only \$6,000.

551—159 acres, with 50 acres under plow; on county road; 200 bearing fruit trees; 7-room house with two fireplaces; spring water flows through the property its entire length; one mile to store and post office. Price for an immediate sale, only \$50 an acre; half cash, balance 4 years at 8 per cent.

528—160 acres, with 150 acres suitable for orchard; 10 acres hay land; house, barn, flowing spring water, some land cleared; located on main county road, which passes through the property; 8 miles from Husum, 12 miles from White Salmon. This tract could easily be subdivided and sold at a profit. It is a real snap at only \$50 an acre; half cash, balance 3 years at 8 per cent.

THE WHITE SALMON REALTY CO.

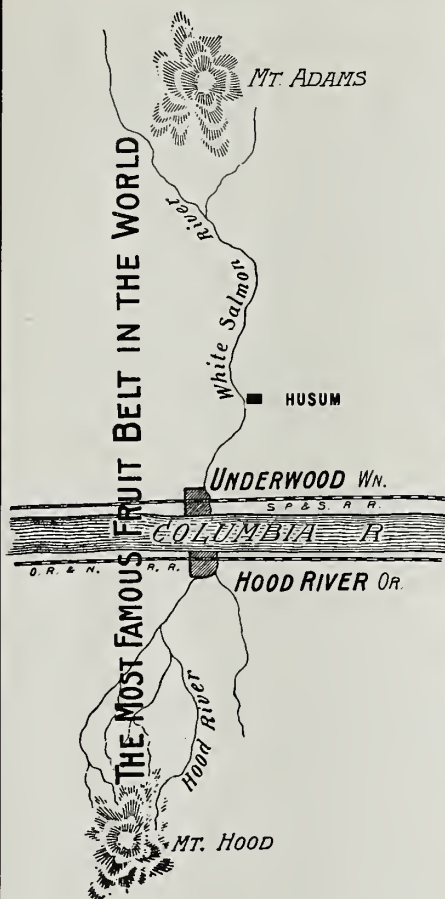
White Salmon, Washington

H. W. DAY

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UNDERWOOD

The Gateway to the White Salmon Valley



WHITE SALMON VALLEY FRUIT GROWERS' UNION OF UNDERWOOD, WASHINGTON,
WON THREE IMPORTANT PREMIUMS AT SPOKANE

First on Best Four-Tier Newtowns, Second on Best Ten Boxes Newtowns, First on Best Pack

Twenty minutes from Hood River by ferry. Two hours by rail, seven hours by boat from Portland. Twenty-five thousand acres first-class fruit land tributary to this point. Has a strong Apple Growers' Union, which controls the output of the valley. Same fruit, same markets, same prices as Hood River has. Fine class of people coming in—a community of homes. Land close in to river and railroad \$40.00 to \$150.00 an acre now, but advancing rapidly.

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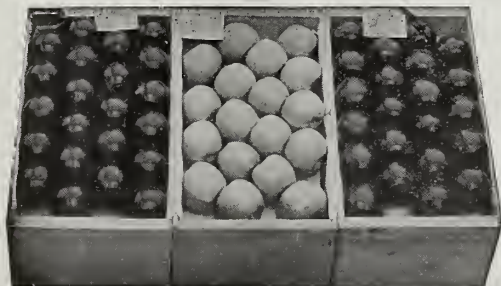
W. F. CASH UNDERWOOD
WASHINGTON

Newtowns Yield \$1800 per Acre

James Lacey on an acre of Newtowns marketed 791 boxes of first grade apples, which brought \$1,698.55. He has left fifty boxes of seconds, which will sell for about \$1.50 per box, and bring the total gross sales from one acre of Newtowns up to \$1,800. The returns from his three and a half acres of bearing apples, all kinds, are \$3,801.76 for first grade apples alone, and second grades will fully pay for the labor of taking care of the crop. This makes an average of over \$1,000 an acre profit.

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Facts that affect you—your family*

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Many started in a small way; today they are independent
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THE RELIABLE DEALERS

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HOOD RIVER, OREGON

HOOD RIVER APPLE LANDS

Pay Big Dividends—Values Will Double in Three Years

WRITE FOR COMPLETE LIST OF PROPERTIES

35 ACRES—20 acres of which are planted to Yellow Newtowns and Spitzenbergs, one-third of which are in full bearing; balance is partly cleared; large 8-room house, stone apple house, 5-room tenant house, good barn, etc.; also new pumping plant, which cost \$700. Located 4½ miles from Hood River, on county road. This place will sell for \$40,000 within a year, and is a big snap at \$30,000. Terms.

20 ACRES—Mostly improved; 9 acres in commercial orchard, 6 acres 3 years old and the balance 1 and 2 years old; 3 acres of the orchard is planted to strawberries; 5 acres in stumps, ready to clear; balance of place in meadow; small house; 6 inches of water stock; 7 miles from town on county road. A good buy at \$10,000; \$3,000 cash.

BEAUTIFUL RIVER HOME—20 acres near the famous Tucker orchard and commanding a beautiful view of Hood River and the valley; best volcanic ash soil; 8 acres cleared, balance in fir timber; small house and barn on place. With a few improvements this can be made one of the most attractive homes in the valley. Price only \$2,200; terms.

75 ACRES—Right in the heart of the valley; 16 acres in commercial orchard, half of which is in full bearing, balance 1 to 5 years old; 14 acres more in cultivation, balance in pine and oak timber, light clearing; large house with modern plumbing; stock, farm implements and everything included at the price of \$25,000; one-half cash.

15 ACRES—All very best volcanic soil; 6 acres in 1 and 2-year-old commercial orchard with 50 peach trees as fillers; 6 acres in brush and light timber; 3 acres in a natural park between the house and river,

with road winding through it, with a magnificent view of river and mountains; new modern 6-room artistic bungalow, with spring water piped through same; new barn; cow, chickens, wagon, buggy, etc., go with place; also 10 shares in Apple Growers' Union. Price \$10,000; \$2,000 cash will handle it.

80-ACRE TRACT on the east side, 5 miles south of Hood River; nearly all planted to Newtowns, Spitzenbergs and Jonathans, as follows: 5½ acres 9 years old, 22 acres 7 years old, 5 acres 6 years old, 20 acres 3 years old, 10 acres 2 years old, and 5 acres 1-year-old trees; also 5 acres 1-year-old pears and an acre of 20-year-old assorted family orchard; balance meadow. This is one of the finest orchards in the valley; lies between two main county roads; best volcanic ash soil, spring water, good buildings, excellent drainage, and could be subdivided into a number of fine homes at a big profit. Place as a whole will pay over 16 per cent on the purchase price this year. Price \$80,000; \$25,000 will handle it.

12½ ACRES—Nicely located in the Oak Grove district; 6 acres in 4-year-old Newtowns and Spitzenbergs in fine condition, 3 acres in 2-year-old strawberries, 2 acres in 1-year-old strawberries; 50 peach trees as fillers; good family orchard; small house. A splendid buy at \$7,500; \$4,500 cash.

20 ACRES—Unimproved, 7 miles out on the east side; red shot clay soil, high and slightly, perfect drainage. This tract lies fine for orchard; under the East Fork irrigation ditch. Beautiful building spot with several large oak trees. One of the best places in the entire valley. Price \$325 per acre; \$1,500 cash.

DEVLIN & FIREBAUGH

THE LEADING DEALERS

SWETLAND BUILDING, Portland, Oregon

HOOD RIVER, OREGON

BETTER FRUIT

A MONTHLY ILLUSTRATED MAGAZINE PUBLISHED IN THE INTEREST
OF MODERN AND PROGRESSIVE FRUIT GROWING AND MARKETING

THE GROWING AND CULTURE OF SMALL FRUITS

BY C. I. LEWIS AND C. A. COLE, OREGON AGRICULTURAL COLLEGE, CORVALLIS

IN THE development of the famous fruit sections of Oregon the strawberry has played a most important part. While they will flourish on a great variety of soils, ranging from a sandy to a clay loam, they do best on deep, strong, sandy clay loam. However, any soil that will produce good crops of vegetables or of field crops will produce strawberries.

While the lay of the land is very important in the berry industry, preparation the soil receives before the plants are set very often determines whether the venture will be a success or not. A good, heavy coating of manure, well composted, or a good crop of vetch should be turned under. This will put a good supply of humus into the soil and aid in holding the moisture. Follow this with some highly cultivated crop to kill out the noxious weeds. The ground may now be allowed to lie until spring, then plowed deeply. Deep plowing is very desirable, as this is the last opportunity to cultivate deeply during the life of the bed. If the ground can be pulverized to the depth of fifteen inches, so much the better. As soon as the ground is plowed follow with the disk, as the clods are much easier broken up now than if put off until they become dry.

The strawberry may be set either in the fall or spring. However, this will not apply to all sections, since there are some where the winters are so cold that the thawing and freezing would force the plants out of the ground. This can be prevented, in a measure, by good mulching. Then again, the plants do not become thoroughly dormant until cold weather, and if disturbed do not have time to form new roots and establish themselves before cold weather; hence they are apt to dry out before spring. The advantage of spring setting is that the plant is thoroughly dormant, and also has a large supply of plant food in store. At this season they resemble somewhat a tuber, in that they can live for a time independent of outside nutriment.

There are several systems for setting the berry field, namely, the hill, the hedge row, the wide matted row, and the double row systems. In the hill system the plants are not allowed to produce runners. The plants may be set to be cultivated either one or both ways.

When the plants are to be cultivated both ways they are usually set either two and one-half by two and one-half or three by three feet. When it is not

a space of three feet is left and two more rows set. This system gives a large amount of plants per acre, also makes irrigation easy. The water is run down between the two narrow rows.

It is very often the case that plants are received several days before the ground is ready for setting. Since the plants come tied in bundles and packed in damp moss it is very necessary that they be opened and spread out to prevent molding. The only safe and economical way is to heel them in.

It is very important that the plants be carefully pruned before setting. The roots can be cut back with a pair of shears or a sharp knife, clipping off about one-third to one-half of their length. When the plants are heeled in before settling it is best to put off pruning until the time of transplanting. In trimming the tops all dead leaves, stems, and all large leaves should be removed. In pruning the plant be very careful to see that the roots do not become dry. It is a good practice to dip the plants in a bucket of water and wrap in paper, including about twenty-five plants to the bundle, then the workmen can handle them without fear of drying out.

The ground having been given its final harrowing, mark it off at the desired distance with either a marker made for that purpose, or if it is desired, a wire or garden line can be used. Setting with a trowel or dibble is the most satisfactory and surest method of getting the plants in the ground properly. The plants should be set so that the crowns

Contents

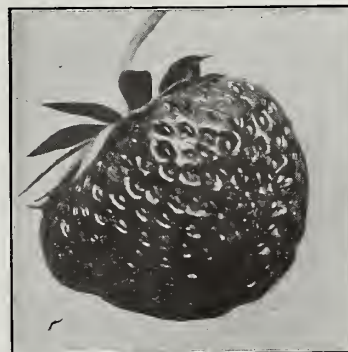
| |
|-------------------------------------------------|
| THE GROWING AND CULTURE OF SMALL FRUITS, 15 |
| RASPBERRIES, BLACKBERRIES AND LOGANBERRIES, 21 |
| CURRENTS FOR HOME AND COMMERCIAL PLANTING, 30 |
| PRESERVING FOOD FOR DISPLAY OR CONSUMPTION, 33 |
| THE CULTIVATION AND GROWING OF DEWBERRIES, 37 |
| GOOSEBERRIES FOR THE GARDEN OR ORCHARD, 40 |
| THE DISEASES AND PESTS OF THE STRAWBERRY, 42 |
| COMMERCIAL FERTILIZER ON THE PACIFIC COAST, 43 |
| RELATION OF AGRICULTURE AND STATE IN EUROPE, 44 |
| FIRST AND SECOND SPRAYS FOR CODLING MOTH, 57 |
| GROWING OF BERRIES A PROFITABLE INDUSTRY, 62 |
| RICHES IN GROWING AND MARKETING RED APPLES, 69 |

intended to cultivate both ways, set the plants about one and one-half by three feet.

The hedge row system is a modification of the hill system. Enough runners are allowed to produce plants to fill up the spaces between the hills. The rows are about the same distance apart as those of the hill system, and the plants are set from one and one-half to two feet apart in the row.

In the matted row system the rows are marked off from three to four feet apart, and the plants are set from one to two feet apart in the row. The runners are allowed to set plants until the rows become about two feet wide. Plants should not be allowed to grow closer than six inches to each other, as this distance has been found to give the best results.

In the double row system, two rows are set about eighteen inches apart, then



CLARK SEEDLING STRAWBERRY

are just even with the surface of the ground. See to it that the roots are not exposed after setting, or that there are no crowns covered. (See Plate 6.)

The cultivation of the strawberry should begin as soon as the plants are established, and continue up to the first of September. Do not cultivate for weeds, as this is only a side issue, but cultivate to keep the soil mellow and conserve the moisture. One of the best implements for the strawberry is the twelve-tooth harrow or Planet Junior. This implement loosens the soil thoroughly and keeps it level.

The summer pruning of the strawberry is not practiced as much as it should be. This practice is of vital importance to the life of the plantation. What we mean by summer pruning of the strawberry is the practice of keeping the runners and bloom culled off during the first year. First year plants require all their strength to produce a good strong crown and root system. When the plants are allowed to crop the first year it is done to the injury of the second year's crop.

It is a well-known fact that for strawberries to succeed they must have an abundance of moisture. In sections where the rainfall is not sufficient the lack of moisture may be supplied by irrigation. In sections where there is a heavy winter rainfall the moisture can be conserved by proper cultivation.

Harvesting and Marketing—Strawberries should be picked every day to insure first-class fruit. It is a fruit that responds

to good handling. Over-ripe or bruised berries will not ship. Never pick the berry when wet. Wet berries always look uninviting and will not sell to an advantage. Do not allow the carriers to stand in the sun any longer than is absolutely necessary. Get them under shelter as soon as possible, as every minute the sun shines on the berries after picked the quicker they will break down. Be careful to see that the pickers pick the fruit with the stems on. A berry with the stem off is not fit for shipping, as it will immediately break down. The best pickers scarcely touch the fruit, but pinch off the stem with the thumb and forefinger. A carrier holding six boxes or hallocks is used to carry the berry from the field. Each picker is supplied with two carriers during the cooler part of the day, but they should use only one during very warm weather, as some of the berries will be exposed to the sun too long if allowed to stand in the field while the second carrier is being filled. The berries are then taken to the packing shed, where they are prepared for the market. Here they are emptied on small trays and the small and defective berries are removed. The trays are made by tacking cheese cloth over a frame about three by three feet square. One packer can keep three pickers busy. The packer puts up from twelve to twenty crates per day, each crate containing twenty-four one-pound boxes. Plate 1 shows a well

put up crate of berries. The boxes or hallocks should be made of spruce or cypress. However, there are some good paper boxes that are being put

on the market, which are finding favor with some of the growers. Plate 2 shows a pony express crate which is very convenient for handling berries on the local market. In fact, it is a portable ice box or refrigerator, the ice being placed in the top keeps the berries cool while marketing. There are some machines on the market for putting together berry boxes. Plate 3 shows one in operation. Two girls can make as high as 8,000 boxes per day with one of these machines.

The fruit must be disposed of as soon as picked. The culls and over-ripe fruit may be sold at the local canneries. Sell nothing but first-class fruit on the market. In hauling the fruit to the market every precaution should be taken to protect it from the dust and heat. A good covered spring wagon will be found to be of a very great advantage. In loading the car be sure to leave sufficient space for thorough ventilation. (Plate 4.) Brace each layer of boxes so there will be no danger of shifting. Never fill the center or top of the car, as this is always the warmest, and the fruit is most likely to break down here first. Brace the center of the car so that the



PLATE III.—STRAWBERRY BOX MACHINE IN OPERATION



PLATE I.—WELL-PACKED CRATE OF STRAWBERRIES



METAL BASKET USED WHEN SETTING
Note the covering over one end of the basket, which protects the plants from hot sun and wind. The hood should always be kept towards the sun.

load cannot shift lengthwise of the car. Nothing but refrigerator cars should be used in shipping strawberries, and the fruit should be cooled before loading. Small consignments to be sent short distances may be shipped by express. The number of crates required to fill a car is about six hundred and thirty.

In selecting plants the sex is a very important point to be taken into consideration. There are a large number of good varieties of strawberries that are self-sterile and require some variety that is an abundant producer of pollen to be planted in connection with them. The nurserymen are well aware of this fact, and have indicated the fertile and sterile varieties by the use of some symbol or letter placed before the name of each variety listed in their catalogues.

All that is necessary for the grower to do is to include enough of the pollen bearing plants to set every third or fourth row.

There is always considerable conjecture as to what to do with the old beds. Some of the growers mow their beds after the crop is harvested, and rake off and burn the trash. (Plate 5.) The bed is then watered and cultivated. Another irrigation is applied about August 1. A good application of some commercial fertilizer will aid greatly in forcing a strong plant growth. Now is the time that the plants are preparing for the next year's crop, and every effort should be made to produce strong crowns. Double croppers should be given a short rest after the first crop is picked, then irrigated and given the same treatment for the second crop as that for the first.

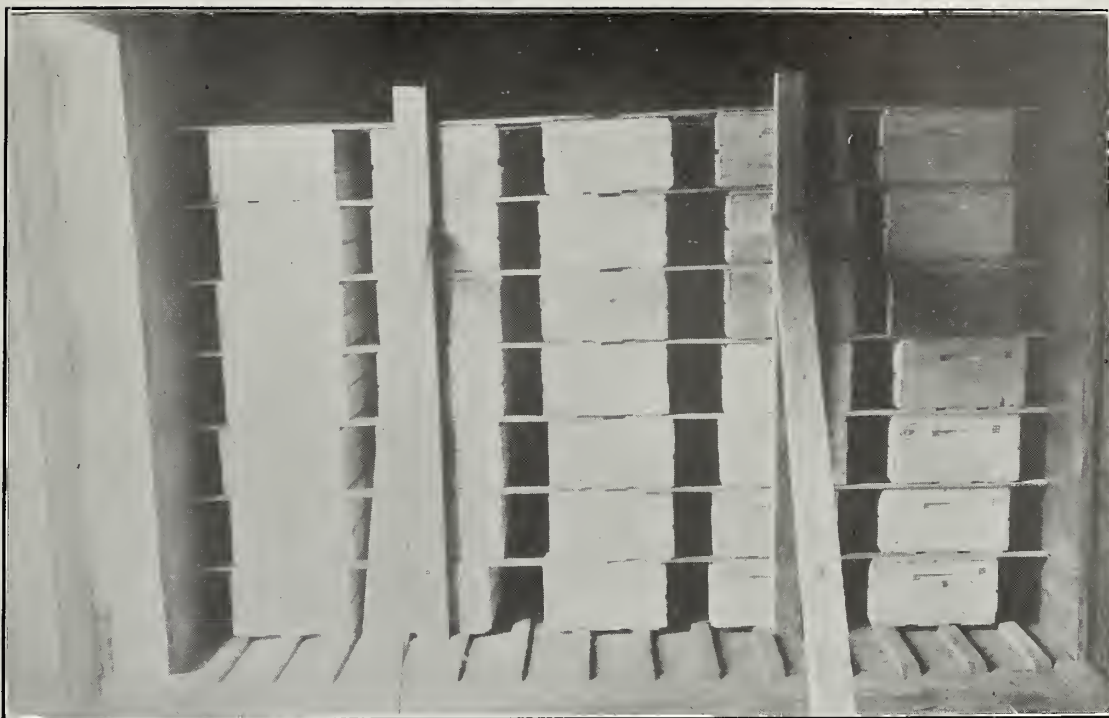


PLATE IV.—CARLOAD OF BERRIES, SHOWING METHOD OF LOADING. THE SMALL SLATS BETWEEN THE CRATES ARE NAILED TO EACH TO PREVENT SHIFTING FROM SIDE TO SIDE

Growers differ as to the length of time a bed ought to be allowed to bear before plowing up. The first and second crops are the best, and usually after that the beds begin to fail. No bed should be allowed to produce over four crops.

The Pacific Northwest is famous for its red raspberries, and especially is this reputation well established west of the Cascade Mountains. Here the climate and soil conditions are such as to give a wonderful growth and great productivity, the plants seeming to revel in the large stores of food that are supplied. This is rather contrary to what is generally expected in red raspberry culture. The berries have been shipped as far East as Chicago in good condition, and with the installation of chilling plants and improved methods of cultivation a large market can be built up in the Middle West for these luscious fruits.

Blackcap growing is an industry that has been badly neglected in this state. It was formerly believed that we could not grow these berries successfully. Early growers were told that the conditions were such that the berries would dry on the vines before maturing, but such is far from being the case, as it has been thoroughly demonstrated in various sections of the Northwest that this berry can be grown with the highest degree of success.

A good income of from \$100 to \$250 an acre can be realized by drying

the fruit, while there is an increasing demand for fresh fruit for local trade and for canning purposes.

The blackberry is a native of America, and is found growing in abundance over a wide range of country. It is perhaps due to its abundance in the native state that its cultivation and improvement had received no attention until the latter part of the last century.

The logan and phenomenal berries have of late attracted a great deal of attention among the fruit growers of Oregon, especially so in the Willamette Valley. Almost every householder who attempts to grow small fruit has a few of these plants.

In general appearance the two plants are very much alike. Both have a trailing habit with leaves and canes of similar color and shape. The only noticeable difference is that the leaves of the loganberry are a trifle darker than those of the phenomenal berry. The fruit is also very similar, that of the phenomenal being somewhat larger than that of the logan, and with the cell rows more irregular. In general appearance the two berries resemble extra large blackberries, though not of so dark a color. The flavor of the two berries is very



PLATE II.—PONY EXPRESS, PORTABLE ICE BOX FOR SHIPPING BERRIES, SHOWING ICE CHEST OPEN AT THE TOP, AND DOOR TO BERRIES AT THE BOTTOM



LAYERING RUNNERS

By laying a stone or drawing soil with a hoe over the runner-cord just back of where the young plant is forming, you will encourage the young plant to take root quickly; will also encourage a heavier rooting system, which always means more and higher-quality fruit.

much alike, that of the phenomenal being somewhat milder than that of the logan.

The gooseberry and currant industry is as yet very poorly developed in this part of the Pacific Northwest. The supply falls far short of the demand. Those who grow this fruit say that they find a ready market for all they produce at from five to seven cents per pound in the home market, or sell at a contract price of three cents to canneries and clear as much as \$200 per acre. The soil required is that of a deep, porous nature, with a good supply of plant food and moisture. Where the sun is strong a northern exposure is desirable. Any soil that will produce good blackberries and raspberries will produce good gooseberries and currants. The soil can be kept fertile by stable manure or commercial fertilizers. Cover crops may be grown among the bushes, but as the plants are set close together there will be some difficulty in turning it under. Wood ashes have also been found to be of value as a fertilizer.

Probably there is no fruit that propagates with more ease than the gooseberry and currant. Well ripened shoots of one season's growth, cut into eight-inch lengths, when handled properly, root very readily. Cuttings can be made either in the spring or fall. Fall cuttings are set out and rooted before cold weather and will necessarily have to be made early in the season. Cuttings made in February are stored in damp sawdust until time for setting in the nursery row. Cut the base square and the tops with a



PLATE V.—MOWING STRAWBERRY FIELD AFTER CROP IS PICKED

slope so one can be distinguished from the other, as it is very necessary that the top be up when in the ground. Prepare the nursery land as soon as it can be done with safety, and mark off in rows three feet apart. The cuttings should be set about six inches apart in the row, and deep enough so that only the top buds are above the ground. Pack the soil firmly against the cutting so that there will be no air spaces at the bottom. If air spaces are left the cutting will not grow. A quick way to set cuttings is to plow a furrow, set them against the land side and pack the dirt back in with the foot. Gooseberries do not root as readily as currants, especially such varieties as the Downing and English types. Here sometimes mound layering is resorted to.

Cut back the bush to force an abundant sucker growth. About July 1 mound up with earth, leaving only the tips of the shoots exposed. It requires about two years to produce a well-rooted plant of the English type; the American will root in one year.

Thorough preparation of the soil is very essential. Give the ground a heavy coating of manure and plow deeply; sometimes it is advisable to subsoil. The soil should be pulverized as deeply as plowed, harrowed, leveled, and marked off. The distance apart the plants are set depends on whether they are to be cultivated one or both ways. If they are to be cultivated one way the rows can be marked off six feet apart and the plants can be set four feet apart in the row. Where cultivation is desired both

ways five by five feet has been found to be satisfactory. In planting, a deep furrow is run one way. The plants are set by placing them in the cross, raking some fine dirt in and tramping it firmly against the roots. Be sure that the roots are spread out to give each individual root as much room as possible. Finish filling the furrow with loose dirt to prevent baking and evaporation. The remainder of the furrow will be filled by subsequent cultivation. The plants can be set either in the fall or in the early spring before the growth begins.

As the gooseberry and currant have a tendency to produce roots near the surface of the ground, it necessarily follows that cultivation will have to be very shallow. A spring-tooth harrow is very effective. The ground should be gone



FIGURE 1 FIGURE 2 FIGURE 3
PLATE VI.—PROPER AND IMPROPER METHODS OF SETTING STRAWBERRY PLANTS
Figure 1, Plant set too deep; Figure 2, Plant set too shallow; Figure 3, Plant properly set

over at least every ten days to keep up a good dust mulch to conserve the moisture. Where the patch is small mulching can be used to good advantage, as it retains the moisture and keeps down the weeds.

Success in growing either gooseberries or currants depends in a large measure on the pruning. There are two systems of pruning, the tree and the bush forms. Here in this state it is best to prune to the bush form. If the bush is left to itself it soon becomes a mass of shoots, none producing good fruit. The best fruit is produced on the one-year-old wood; however, older wood bears, but the quality of the fruit decreases as the shoots increase in age. A large number of shoots are produced each year, many more than is necessary for the good of the plant. The weaker of these must be cut out, leaving from four to eight, depending on the strength of the bush, which is considered sufficient for a commercial plantation. The canes should be renewed every three years, that is, pruning should be so done that there will be no canes of over three years of age. When the plants are weak it is advisable to head back the canes in order to produce good, marketable fruit. Proper pruning can be made to take the place of thinning with gooseberries; with currants it was found that by clipping off the outer half of the flower cluster, larger and better fruit was obtained.

Gooseberries are marketed in the green state, and can be stripped from the canes. The pickers supply themselves with thick leather gloves, to prevent the thorns from injuring their hands, strip off all the fruit from the canes. A large amount of leaves and trash is removed with the berries, but as they are run through a fanning mill the trash is all blown out. The fruit is marketed in berry boxes or in bulk, depending on whether it is sold on the market or at the cannery.



STRAWBERRY PATCH, YAMHILL COUNTY, OREGON

Currants will necessarily have to be handled differently from gooseberries, as they are picked in the ripe state and are very easily bruised. They should be picked dry. Currants picked wet soon spoil. To pick the cluster grasp it at the base with the thumb and forefinger, severing it from the shoot, using care not to bruise the fruit. Never allow the pickers to strip the fruit as with gooseberries. As soon as the skin is broken the juice begins to run, and a few damaged berries will spoil a whole box. The fruit sells well when put up in the same manner as strawberries. Five-pound packages are very desirable for the home trade, as this is a very convenient size for those who desire to put up jellies and jams.

The length of time the plantation will produce good marketable fruit depends on the care it is given. Some growers say that with the best of care they find that it does not pay to crop their plants longer than eight years. By the end of that time the plants require so much attention in order to produce good fruit that it is a source of expense rather than income. The plants should be grubbed up as soon as they begin to produce inferior fruit. In order to keep up your production of fruit, have a new field of plants ready to come into bearing by the time the old one is grubbed out.

The varieties of gooseberries and currants that have given the best results in this state are the Oregon Champion, Industry, Red Jacket, and Pearl; and for the currants, the Perfection, Fay, Cherry, and White Grape. Of the gooseberries named, the Oregon Champion is perhaps the most satisfactory. It is a large berry of excellent flavor, a prolific bearer, and resistant to mildew. The Pearl is a good cropper, but the fruit has a tendency to be woody. As to currants, the Perfection and the Fay seem to be in favor. Both are of the red type, good bearers, hardy, producing large, fine-flavored fruit.

Although the acreage at the present time is comparatively small, the indications are that in the near future several hundred acres of cranberries will be found in bearing. Our coast counties, such as Coos, Lincoln, and Tillamook, have quite extensive areas of bog and swamp land that are adapted for cranberry growing.

The cranberry is a very easy crop to grow, but nevertheless is very exacting in its requirements. Some of the essentials for successful culture are proper soil, abundance of good, coarse sand in the neighborhood, and proper drainage. Another condition which, while not



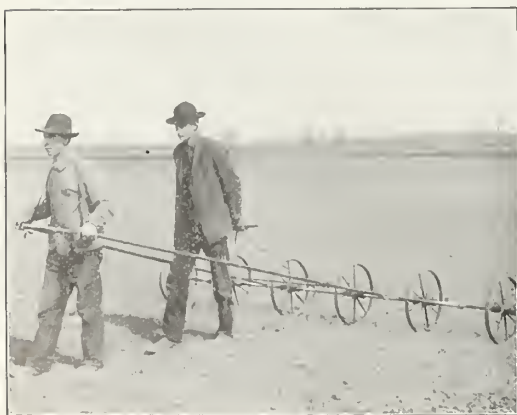
STRAWBERRY PACKING HOUSE, HOOD RIVER VALLEY, OREGON

absolutely necessary, is very desirable, is the presence of a living stream of water.

The alluvial soils are practically the only ones that will grow the cranberry successfully, and among these the peat and muck soils are much to be preferred, as a mixture of a certain amount of sand with this peat and muck seems to produce the ideal soil. Clay soils are to be avoided. In choosing the location, the water table is a very important item. The bog should allow a sufficient drainage to keep the water table about a foot below the surface. It may be desirable at times to bring the water nearer the surface, but under many conditions a drainage of at least a foot is desirable. The presence of wild cranberries is always a very good indication. An abundance of sand is necessary in establishing a bog. A location should therefore be chosen where an abundance of sand can be obtained cheaply.

First of all, the drain should be put in. The open ditch system is the one more commonly used. Following the drainage, all trees and shrubs should be taken out. The bog is then ready for scalping or turfing. By this we mean that the top layer of the bog is removed to a sufficient depth to eradicate all roots of grasses and rushes. This should be followed by careful grading, which is very important. Should the soil at this point become compact, it is often very desirable to plow and harrow. We are now ready for the sand. As a rule, three or four inches is sufficient. This sand should be free from clay and from weed seed, and somewhat coarse in character. In placing sand on the bog care should be taken not to mix it with the subsoil. Where there is any question of inability to hold sufficient water to mature the berries in good shape, dikes and gates should be constructed so as to raise the water table. Flooding is useful in fighting frosts. The indications are, however, that our Coast counties are not subject to such danger. Flooding is also practiced in fighting insects, and while we do not seem to have any at present, the future may supply us with them in abundance.

The cranberry is generally propagated



SIX-WHEEL MARKING DEVICE FOR BERRIES

from cuttings ten to fifteen inches in length. The distances for planting vary—nine by eighteen inches, twelve by twelve, and eighteen by eighteen are distances commonly used. The plants are generally set by means of a tapering spade or wedge-shaped dibble. The instrument is placed in about the center of the cutting and forced into the ground. It is desirable to set the plants in at a low angle, and if all are pointed in the same direction they will tend to cover the bog more quickly than if planted otherwise. It is safe to count on ten barrels of cuttings to the acre. Where these are to be shipped a considerable distance, care should be taken to prevent heating. The plants are generally set in the spring, and where there is no danger of the bog drying out can be set as late as June.

The cranberry is generally classed according to its shape, such as bell, cherry, bugle or olive. During the past few years a large number of varieties have been placed upon the market, and there is a fine field for experiment in developing new varieties. Among some of the leading varieties can



SLED-RUNNER MARKING DEVICE FOR BERRIES

be named Early Black, McFarlane's, and Centennial.

For the first two or three years the bog will need considerable attention, as all weeds and grass must be kept out. The first year the plants can be hoed, care being taken, however, not to work the soil deeply, for if the peat is brought to the surface it gives a footing for weeds. The second and third years a little hand weeding will be necessary. Some attention should also be paid to the water table. If it gets either too high or too low the plants will not make good growth.

Harvesting is generally done on contract at so much per basket or bushel. Both hand and machine picking are practiced. It is customary to line out the bog and give each picker a definite territory. This insures clean picking. The



NEW DEVICE FOR CUTTING RUNNERS

For many years there has been a demand for a runner cutter attached to a handle, so that the cutter might be used separately and apart from the cultivator. The R. M. Kellogg Company has at last succeeded in getting up a device that exactly fills the bill. The cut shows the simplicity of operation. The operator can guide the cutter so that it will cut off all runners as desired, as it may be run as close to the row of plants as you wish.

yield seems to vary considerably. Bogs that will average one hundred bushels can be considered bonanzas. The indications are that the yield on the Pacific Coast will be very high, some of the reports being almost unbelievable, ranging from 300 to 800 bushels per acre. After picking, the berries are generally run through a fanning mill, are graded according to size and color, and are then stored for five or six weeks. They should be stored in crates, care being taken not to allow the storehouse to become too warm. In no case should the sun be allowed to shine on the stored berries. They will be found to develop a great deal of color under ordinary storage.

The cost of preparing a bog will vary materially. The amount of trees, undergrowth, difficulty of scalping and sanding, all have an influence. The cost will range from \$100 to \$400. This heavy cost of preparing has kept many persons from entering the business. It should not do so, however, for a successful cranberry bog will often at the end of the fourth year have paid for all expenses, even though these total from \$200 to \$300 per acre. From the fourth year on, yields are heavy on good bogs, and as a result they are easily worth a thousand dollars per acre.

The prices for cranberries vary quite materially. Rarely do they go below \$7 per barrel, and very seldom exceed \$12. One need have little fear of over-production. Cranberry land, compared with ordinary fruit land, is very limited in area. A fair market can be found on the Pacific Coast and there are good possibilities for building up a trade in the Rocky Mountain and Middle Western States. Nearness to shipping ports will also aid materially in cheap distribution.

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"Better Fruit," the Hood River fruit growers' magazine, and the Clatskanie Chief, both given in a special clubbing offer for \$1.75 per year. Regular price \$2.50 per year.—Clatskanie Chief.

RASPBERRIES, BLACKBERRIES AND LOGANBERRIES

BY W. S. THORNER, PULLMAN, WASHINGTON

PRACTICALLY all kinds of small fruit can be profitably grown in nearly every part of Washington. Some localities are especially adapted to commercial production of berries or other small fruits. In others, such fruits are grown only for home use; but wherever other fruit is grown, either for home consumption or for sale, berries can be produced with equal success and satisfaction.

In several localities in this state, especially west of the Cascade Mountains, berry-growing has come to be a very important industry. The fruit grows to a perfection found in few other parts of the United States. The difficulties due to expense in picking and marketing the berries have been overcome by careful attention to the manner in which the berries are grown and by the formation of co-operative associations for marketing or preserving the fruit. The information contained in this article has been gathered largely from the experience of the most successful berry-growers in those localities and from the berry plantation on the Station Farm at Pullman. While intended primarily for the grower of berries for commercial purposes, the suggestions are equally applicable to the home fruit garden, and may be relied upon to give profitable returns wherever they are made use of.

The raspberry and blackberry are two of our most cosmopolitan plants. Some form or forms of each are found in almost every climate and on practically all kinds of soil. True it is they are partial to certain soils, yet no farmer in the state need be without berries if he chooses to grow them. A deep, well-

drained, yet moist, sandy loam with considerable humus in it is the ideal soil. While blackberries do well on and apparently favor moist soil, raspberries are

crops of vetch or peas between the rows and working them into the soil in the spring, or by the hauling in of stable manures. The latter method combines



C. D. MOORE'S BERRY PATCH, WHITE SALMON VALLEY, WASHINGTON

freer from winter injury on dry soil and rather favor it to the moister soils. If the soil lacks humus it should be supplied if possible either by green or stable manure before the plants are started, otherwise one will experience more or less difficulty in adding humus. Plant food may be added annually and economically to the soil by one of two methods. Either by growing cover-

two of our very important industries under one management, i.e., dairying and small fruit growing. The phase of fertility is not, however, the only common ground of the two industries. They naturally travel hand in hand and where berries are grown, dairy cattle should be kept.

If the soil is not naturally well drained artificial drainage must be provided, or success cannot be hoped for. Berry plants enjoy plenty of moisture, but it must not be in excess. Many patches observed during the season showed evil effects from excess of water at their roots. Land that is apparently dry enough during the summer months may be entirely too wet during the winter season.

While studying conditions of soil drainage, the question of air drainage must not be neglected. Evil results will come from poorly air-drained plantations of berries as surely as they will from poorly soil-drained fields. This can be avoided by the use of planting plans properly adapted to sloping fields, and removal of any obstructions such as hedges, fences, etc., that may tend to check the free circulation of air down the valleys or over the flats. Plant diseases



FIELD OF BLACKCAPS OWNED BY MR. SHERMAN, PAYETTE, IDAHO, SHOWING HIS METHOD OF HANDLING PLANTS
Courtesy Oregon Agricultural College

and insect enemies thrive best in the poorly drained field.

Nothing can take the place of thorough cultivation. Careless or injudicious tillage is the cause of the ruin of more fruit than all the insect pests and plant diseases combined. "The price of successful fruit growing is eternal vigilance."

Cultivation is the best and most economical way of keeping down weeds, conserving the soil moisture, preparing plant food for the plants, and improving the physical condition of the soil. These are vital considerations in berry culture.

The work of cultivation should start as early in the spring as the condition of the soil will permit and continue late into the harvest season. Many berry crops are cut short by the cessation of cultivation too early in the season. The early cultivation should be for the purpose of loosening up the soil to let the air in, while that done later should be for the conservation of moisture, killing of weeds and suckers, and making plant food more available.

Every commercial berry field should be provided with a conveniently located packing or cooling shed of some sort. It should be large enough to provide a place for the temporary cooling of the fruit as it is packed as well as some sort of a shelter for the packers and their crates.

One of the perplexing problems that most growers have to contend with is the securing of pickers. Many of the growers are solving this by providing suitable and pleasant camping grounds or living quarters, and securing boys and

girls or even young people from the cities and nearby towns.

The methods of tabulating the work of the pickers is somewhat varied. However, most of the growers are using heavy manila tags upon which is printed the grower's name, a space for the picker's name and figures of various denominations to be punched as the required number of cups of fruit are picked. These tags are generally suspended by a string around the picker's neck, and when all punched represents one dollar's worth of labor. In many country places they are often passed at face

value at the stores, redeemable on demand by the grower.

Several forms of berry stands are used but probably the most satisfactory one is the low, legless one, which is hard to upset and easily placed in the shade. Some pickers prefer the tall one; however, it is difficult to set in the shade and almost impossible to keep it from tipping over. One with short legs is frequently used; but it has few, if any advantages over the flat-bottomed one.

A successful grower gives the following directions for picking:

"Raspberries should be picked when they are turning red. They will color and ripen in twelve hours, and will have as fine a flavor as if allowed to remain on the bushes until entirely ripe. They should never be picked when wet or damp, nor picked or packed for shipment during the extreme heat of the day. If picked when warm, the berries should be allowed to stand in the picking trays in the shade for a few hours before packing. The morning pick is the best for long distance shipping.

"A rigid inspection of the bushes should be made by the field boss to see that no ripe berries are overlooked, to be picked over-ripe at the next picking, as a few of these will spoil an entire case and may lower the grade of the entire consignment. The packer at the receiving shed should examine each tray as delivered by the pickers to see that the berries at the bottom of the cup are as well



THOROUGHBREDS GROWING IN NORTHERN ILLINOIS

Alfred Taylor, of Thomson, Illinois, in enclosing the photograph which we reproduce above, says: "This patch is from plants bought of the R. M. Kellogg Company and the varieties shown are August Luther, Senator Dunlap and Dornan. The plants are set in rows three and one-half feet apart and the runners had been cut back until July or August. The photograph was taken in September."

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A RHODE ISLAND FIELD OF THOROUGHBREDS

Writing under date of February 23, 1909, to the R. M. Kellogg Company, Three Rivers, Michigan, William J. Baker of Carolina, Rhode Island, says: "I am sending you under separate cover by this mail a photo of my strawberry patch. Plants were bought of you in the spring of 1908, photo taken 105 days after setting. No need to write a long story; the picture (and an order for more plants) speaks for itself. While your price is a little high this trip, still I would rather pay \$10 per thousand for your plants than \$3 for some others I have seen."

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picked as those at the top. Display on your receiving counter a cup of well picked and filled berries, and call it to the attention of all pickers who fall below the standard."

One of the drawbacks to the growing of soft fruits in many sections has been due to the difficulty of getting the fruit to market without serious, if not total loss. The larger growers and the fruit associations solved this problem by making shipments in carload lots in refrigerator cars, but other means had to be resorted to for the small or isolated shipper, and as a result of this we have the so-called "pony refrigerator"—a small, light refrigerator that will hold fifty-four boxes of fruit, constructed in such a way that it can be sent by express, iced before starting, and re-iced one or more times on the road if necessary, and when empty returned to the owner or shipper to be again filled and sent out. This has made it possible for small growers to ship quantities of soft fruit from the Coast to St. Paul, Chicago and other central points, and have it arrive at its destination in good condition.

Care must be exercised in the handling of fruit for long shipments. The fruit must be in prime condition when it leaves the field and not needlessly hauled over a rough road nor exposed to the sun for a longer period of time than is actually necessary. Over-ripe, soft, or wet fruit should never be shipped at all, but be immediately consigned to the can- nery, evaporator, or fruit juice factory.



KELLOGG'S EXPERIMENTAL BED, THREE RIVERS, MICHIGAN

Here is where the R. M. Kellogg Company test all of the varieties from which they are propagating, and it is from this experimental plot they get the records used in writing the descriptions of the different varieties. By this method can be obtained a definite account of the behavior of each variety, both in plant and fruit production, as well as the quality of the berries. The time of ripening and the date of last picking is also noted. From the time that plants start blooming until the berries are all picked, this experimental plot is watched with much interest.

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The distances that the plants should be set apart and the plan used is of more real importance to the berry grower than was formerly believed to be. Many berry plantations in Washington are now yielding poor or unsatisfactory crops simply because they are planted so close together that it is impossible to give proper culture and training. Like all other industries of a similar nature, it is frequently abused by the over-zealous grower. This close planting is not only responsible for poorly developed plants and, therefore, small, unsatisfactory

yields, but is also responsible to a very marked degree for the severe losses from insect pests and plant diseases. There is no condition more favorable to these pests than the crowding of plants together in large areas such as we find in Western Washington. Weak plants and poor air drainage are ideal conditions for all kinds of pests to secure a foothold and do much damage. The following reasons give some of the evil effects of close planting:

(a) Proper tillage cannot be given when the plants are crowded.

(b) The training of the plants and harvesting of the crop is more expensive.

(c) Small, unsatisfactory growth and, therefore, light yields.

(d) Poor air drainage invites plant diseases.

(e) Crowding provides better breeding places for all kinds of insects.

(f) Increased expenses per acre for planting, care, training and harvesting, without increased yields.

(g) Small, soft fruit, as compared with large, firm fruit.

The soil, moisture, variety, and the nature of growth all tend to govern the planting plan used and the distance apart that the plants are to be set. For the convenience of this discussion the plants are grouped under two heads, as follows:

The Upright Growers—Included under this head are the red raspberries and such of the blackberries as do not produce long canes, examples



STEVENS' LATE CHAMPION IN INDIANA

This illustration is from a photograph sent the R. M. Kellogg Company by Will F. Sanders of Rochester, Indiana. He grows strawberries for market on an extensive scale. Mr. Sanders writes that practically all the plants he grows are propagated from Kellogg Thoroughbreds, and although the above picture represents a block of Stevens' Late Champion only, he employs Dunlap, Warfield, Haverland, Bubach, Dornan, Gandy, Aroma, Sample and others of our plants. Mr. Sanders' field illustrates the extraordinary possibilities of commercial strawberry growing where the grower knows his business from A to Z.

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of which are Snyder, Ancient, Briton, etc.

The Vine Growers—Those plants producing long, trailing, recumbent vines so commonly seen in the Logan and Phenomenal berries and the Evergreen, Early Mammoth and Himalaya Giant blackberries.

There are two general systems, with numerous modifications, for planting the upright growers. These are known as the "hill" and "continuous row" systems. Each has its advantages as well as its disadvantages. The evils are apparently minimized in the former, while the latter system has a greater number of admirers but is more easily abused. The larger growers apparently favor the hill system on account of the advantages which it offers for the handling of large yields, while the smaller planters usually favor the continuous row system because it lends itself more readily to close planting and heavy fertilizing.

Continuous Rows—This system takes its name from the fact that the plants are in continuous rows, and while the individual plants are farther apart, yet it bears practically the same relation to bush fruit culture that the matted row system does to strawberry culture. The plants are set in rows from seven to nine feet apart and from two to three feet apart in the row. While this gives plenty of room for culture in one way it completely bars it in other directions.

A large percentage of the first berry fields planted in Western Washington were planted in this way, while a majority of the new fields, especially of the larger ones, are being planted in the hill system.

Practically the only advantage that this has over the hill system is that it is possible to set more plants per acre and under favorable conditions harvest a few more crates of berries per acre. However, the grade is usually not as

good as that of those grown by the other system.

It has a few very important disadvantages that should be carefully considered by every prospective grower. They are as follows:

Cultivation is possible in only one direction.

Air drainage is usually not so good.

A large portion of the plant is shaded more hours of the day.

In dense rows it is impossible for the pickers to secure all of the ripe fruit at each picking, and therefore soft, unmarketable fruit will frequently find its way into the berry cups.

Diseases affecting the roots of plants spread more rapidly in closely planted fields than in other fields.

Diseases affecting the canes and fruit are more abundant in the continuous row than in the hill system.

Hills—As the name implies, this system consists of growing the plants in hills rather than in continuous rows. The distances that the plants are apart will be governed somewhat by the fertility and variety of the fruit grown. A rank-growing variety on rich soil should be planted from six to seven feet apart each way, while a weaker-growing sort on fair to poor soil may be planted five to six feet apart each way. As a general rule, however, six feet apart each way, or 1,210 plants to the acre, gives satisfactory results for most varieties, soils and purposes. Some of the finest and most



THOROUGHBREDS THAT ALWAYS TOP THE OREGON MARKET

The above illustration is of the twin-hedge rows of Kellogg plants of A. H. Finnigan, located just out of Portland, Oregon. In his letter accompanying the photograph Mr. Finnigan says: "I had a most successful season this year, knowing exactly where every crate of berries was going before it was picked, and my 1910 crop already is engaged. No trouble to sell fancy fruit here!" Mr. Finnigan made the same flattering report in 1907 and in 1908. Kellogg's plants always win when they are properly handled, and a glance at Mr. Finnigan's field leaves no doubt as to the attention he gives the plants. Copyright, 1910, by R. M. Kellogg Co.



WOMEN AND STRAWBERRIES

In this garden everything in the way of berries and vegetables is grown to perfection, all kinds of bush fruits and grapes. There is a row of strawberries in each row of grapes, but the posts hide the view of the plants. You will note that Glen Mary is set in a row between Pride of Michigan and William Belt. This is for the purpose of properly mating Glen Mary, which is not sufficiently strong in pollen to give best results when set alone. You can have a garden just as nice as this one by using the Kellogg strain of plants and following their methods, as these folks have done. Copyright, 1910, by R. M. Kellogg Co.

productive patches in Western Washington are planted in this way.

The hill system has one apparently serious drawback, in that it reduces the number of plants possible to set to each acre from 1,840 where planted three by eight feet to 1,210 plants where planted six by six feet. To the average advocate of the hill system this is no drawback, as he is more than able to make up in quality and grade what he loses in quantity. The following advantages are very apparent in this system:

Room for thorough tillage with horse cultivators each way, and even diagonally if so desired.

Room for pickers to see and secure all fruit as it ripens; therefore, the elimination from the cups of soft, unsalable fruit.

The maximum amount of sunlight, which is essential for the formation of large buds and the development of the highest quality and best size of fruit.

Necessary room for proper pruning, thinning, training, etc.

Economy and simplicity of supporting the canes.

A more nearly perfect air drainage, which tends to minimize, if not eliminate the dangers of late spring frosts and much of the loss caused by bacterial and fungus troubles.

As a matter of convenience we have grouped the Evergreen, Mammoth and Himalaya Giant blackberries and loganberries and called them the viny grow-



AN ACRE OF THOROUGHBREDS THAT YIELDED OVER SIXTEEN HUNDRED DOLLARS

Here is a field of Kellogg Brandywine plants covering two and one-half acres, the property of J. W. Roe, of San Gabriel, California. Referring to the photograph, Mr. Roe wrote under date of March 18, 1909, as follows: "From one acre of this field I sold \$1,677.88 worth of berries in one season (they bore for about six months). Of this amount \$1,155 was net."

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ers, since they produce long, recumbent, climbing, or trailing vines. From the nature of their growth they require an entirely different planting plan and system of training to make satisfactory cultivation and picking possible. Eight feet is a reasonable distance apart for the rows, but the plants in the row require intervals of from sixteen to twenty-four feet, governed entirely by the fertility and moisture determinants. In good rich soil with the proper amount of moisture it is not uncommon to find canes or vines from fifty to sixty feet in length, while on dry or poor soil they

may not be more than four or five feet. Other things being equal the longer and stronger the cane that can be grown the more productive will be the field. Many of the early planters made a mistake in using the opposite instead of the alternate system of planting. It is only reasonable to assume that strong feeding plants will sooner or later begin to crowd one another when planted not more than eight feet apart and, therefore, for this reason we find it advisable to use the alternate row system.

The practice of using berries as fillers in a young orchard is one which requires the most careful consideration. It involves the same principles that the use of fillers in any orchard does, and can be fairly treated only from a similar point of view. The profitable use of fillers depends more upon the man who uses them than upon any other single consideration. While it is a safe proposition for some men, it is very dangerous for others. The arguments may be well summed up in the following manner: Fillers are a good thing in an orchard so long as they stimulate better tillage and in no way interfere with the growth or management of an orchard. But under no consideration must they be permitted to remain long enough to interfere with the pruning, spraying, fertilizing, thinning and harvesting of the orchard crop. The man is rarely to be found who will remove a good, healthy, productive filler before it does serious injury to the permanent tree. So long as this



THOROUGHBREDS IN IDAHO

This photograph illustrates the one-fifth-acre strawberry patch of Kellogg plants on the farm of W. H. Garner, Preston, Idaho, from which he sold \$125 worth of strawberries in 1909. He writes August 21, 1909: "It's no trouble to sell 'Thoroughbreds.' Everybody says my berries were the best they ever saw. I picked ten of them which weighed one pound. The plants I got of you this spring are doing fine."

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SOME FINE SPECIMENS
OF PHENOMENAL BERRIES
FROM ALBANY, OREGON

condition exists the use of fillers will be attended with more or less risk.

There are two general systems of planting berries as fillers in the orchard. One consists of adapting the continuous row system to the orchard conditions, and the other by making use of the hill system. Both systems are successfully used at the present time. However, for various reasons the hill system, carried out in the following manner, is preferable: Plant the fruit trees thirty-six feet apart, using the alternate system, and set the berry plants six feet apart between the fruit trees in the rows, as well as between the rows. This will allow the planting of 1,180 berry plants and thirty fruit trees per acre.

This method of planting minimizes the evils of fillers in an orchard and, if properly cared for and the bushes removed as the trees require the room, large quantities of small fruit may be raised in conjunction with the growing of the orchard trees. After the third or fourth years all berry plants within six feet of the fruit trees must be removed without fail, and the fourth or fifth years those berry plants situated diagonally on the same squares with the trees must be removed, and so on until all berry plants are out. In so doing the trees are given abundance of room as they require it, and no evil should result from the use of fillers. Where conditions of soil and climate are

favorable for each, this is a good plan to use in connection with the growing of English walnuts. Since walnut trees are grown with longer stems and require but little or no spraying, they are much better adapted to use in connection with small fruit than ordinary orchard trees.

The manner of training and staking is largely governed by the varieties, system of planting, and the method of tillage. No single phase of berry culture requires a more careful consideration than that of training and staking. The neglected patch is a thing of the past and the up-to-date culturist no longer expects to gather successful crops without giving special attention to training. The conditions that exist in Western Washington have been productive of almost a revolution in the methods of berry culture, and while this is more noticeable in the methods of training than in any other particular, yet wonderful strides have been made in all directions.

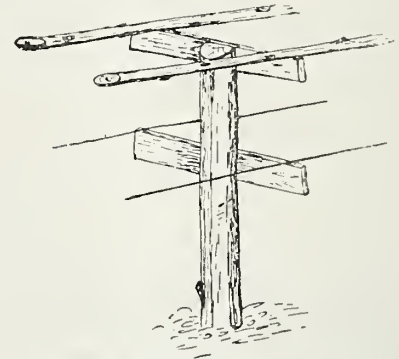
There is practically only one system to follow for training the upright growers when they are planted in hills, and that is to set a light post from five to six feet high at each hill. From five to seven canes are trained up and tied firmly to this post until they reach the top, when they are topped and are permitted to throw out laterals. This produces a well-supported, compact hill that can be easily cared for with a horse cultivator and gives the fruit every opportunity for its fullest development as well as simplifies picking very materially.

A grower at Sumner employs an inter-

esting and very successful method of training his Snyder blackberries, which are planted in hills six feet apart each way. Instead of using one light post at each hill he sets two from twelve to eighteen inches apart. While one post is supporting the fruiting canes the growing canes are being trained upon the other, and any one familiar with the Snyder blackberry will at once see that this simplifies picking and training materially, even though it does increase the initial cost of staking.

Whenever the continuous row plan of planting of upright growers is followed, some form of lateral support is necessary to keep the canes from leaning over into the spaces between the rows and interfering with cultivation and picking. Various materials, from heavy wire to light alder or even cedar rails, are used for this purpose. The best plan is to set a single line of posts about sixteen feet apart and from five to five and one-half feet high through the middle of the row. At three feet from the ground and at the top of these posts nail one by three-inch cross arms eighteen inches in length. Along the outer and upper corners of these arms heavy (preferably No. 10) wires are stretched. This gives two wires on each side of the row and forms an excellent simple method of training this kind of canes.

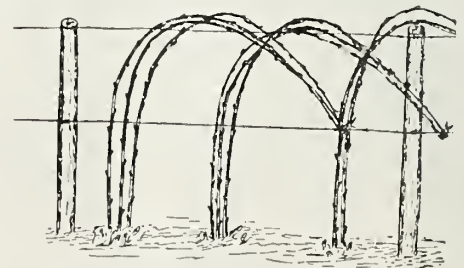
Another method that is frequently employed consists in setting light posts sixteen to eighteen feet apart in pairs,



GOOD FRAMEWORK FOR SUPPORTING
CANES OF RED RASPBERRIES

one on each side of the row, and then fasten these together with two cross bars. Upon these cross bars light rails or poles are laid to support the canes, much the same as the wires in the former plan. The principal advantage of this plan is that the poles do not injure the canes as much as the bare wires.

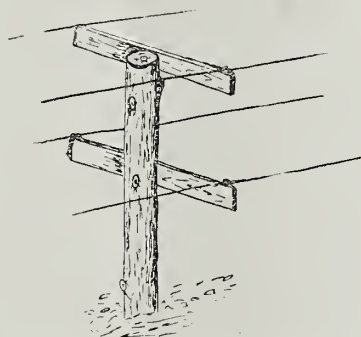
A grower at Snohomish uses a very satisfactory method for his raspberries. The plants are at intervals of three feet,



ONE WAY OF HANDLING TWELVE-FOOT
CANES OF RED RASPBERRIES

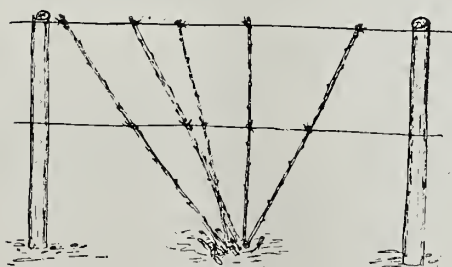
in rows eight feet apart. With his conditions of soil and cultivation he is able to produce canes from twelve to sixteen feet high, and does not top them until he is training them on the wires some time during the winter. His system of training consists of setting a single line of posts six feet high, sixteen to eighteen feet apart, through the middle of the row. Two strong wires are attached to these posts, one at the top and the other three feet from the ground. The canes from one hill are gathered together and gently bent over until the tips touch the lower wire, usually about six feet from the plant or opposite the second plant, where they are firmly tied to the wire. The next plant is likewise treated in the same manner, all the canes leaning in the same direction, and so on throughout the row; in fact, the whole patch is trained in the same direction. The simplicity, ease of handling, and the great amount of cane that can be saved in this manner, recommends this system to many.

Those varieties producing long recumbent or trailing vines require horizontal support to make cultivation and picking possible under any circumstance. Undoubtedly the most satisfactory method for our conditions consists in setting a single line of posts five feet high and sixteen to eighteen feet apart in the rows. To these posts nail two eighteen-inch cross arms, one at the top and the other three feet from the ground



BEST FORM OF SUPPORT FOR VINE-PRODUCING SORTS

and at the ends of the cross arms fasten four No. 10 wires. This provides four wires for each row. The two upper wires act as cables for the growing vines while the two lower ones serve as supports for the fruiting vines. As soon as the strong shoots reach the upper wires they are carefully trained below them and supported by soft string. The growing tips must always be kept in an



GOOD WAY TO SUPPORT THE CANES OF SMALL FRUITS IN WINDY LOCALITIES



THE ASPINWALL LOGANBERRY FIELD, BROOKS, OREGON

upright position or the cane will throw out many undesirable laterals.

When ready to lower the canes from the upper to the lower wires small one by one-inch strips twenty inches long, and notched at each end in such a manner so as to fit over the wires, are placed upon the lower wires from eighteen inches to two feet apart. These strips form a support for the canes as they are lowered, and are easily removed during the process of cleaning up and pruning.

The process of lowering the canes is easily accomplished by cutting the cords which support them and simply permitting them to rest upon the one by one-inch strips. This leaves the upper wire again free for the training of the new crop of shoots, and when the proper time comes these in turn are lowered for fruiting on the lower wires.

While the system may seem complex and more or less difficult to handle, yet it is very simple and has many valuable features even though it does require a little extra time during training season. Some of the especially valuable features are:

That the growing canes are separated from the fruiting canes, thus making picking much easier.

The growing canes being above, they receive full benefit of sun, and for this reason produce better canes, shoots and buds.

The process of pruning is simplified a hundred per cent.

It makes possible the growing of a greater number of plants per acre than the ordinary method.

These varieties are sometimes trained upon a two-wire system much the same as grapes, but this compels the fruiting and growing canes to grow together, which is a very undesirable feature.

The work of pruning berries naturally divides itself into three heads: First, the removal of the old canes, which should take place at the close of the harvest season; second, the pinching back, or summer pruning, which is done during the growing season; and third, the removal of surplus wood, which should be done late in winter or early in spring.

Practically all growers agree upon the method and time of removing the old



TOOL USED BY MR. SHERMAN, PAYETTE IDAHO, FOR BENDING OVER BLACKCAPS
Courtesy Oregon Agricultural College

fruiting canes, realizing, of course, that they are of no more use to the plant and that further incumbrance simply means an excellent harbor for insect pests and plant diseases. In tender varieties it is sometimes thought best to let them remain until the regular pruning season of early spring, in order that they may act as a protection to the young canes.

The question, "At what height do you pinch back your young raspberry canes," was asked a large number of berry growers. The replies varied with the locality, the man, and the system of training followed, ranging from no pinching back up to eighteen inches. Many growers west of the Cascades held the opinion, however, that from four to five feet gave the best results for their conditions. When the canes are pinched back at this height it tends to produce firm wood, which is seldom injured during the winter season. In some fields where the canes were pinched back at less than four or five feet they produced rather long laterals, which failed to thoroughly ripen up before winter, and during the winter were severely injured or even killed, while in those fields where the canes were "pinched back" high, or not at all, the wood apparently ripened earlier and suffered little or no injury. The probable reason for this is that the early pinching back tended to throw the plant into active growth again rather than permit it to assume a semi-dormant condition.

In localities where the maximum growth does not exceed four or five feet "pinching back" at eighteen inches, or even no pinching back at all, has proven very satisfactory.

Another very important phase is the regular and systematic removal of all suckers during the early part of the season, and careful thinning when they are



PROPER MATING OF VARIETIES

This illustration represents the R. M. Kellogg method of mating the pistillate varieties. The row of bloom on the left is of an extra early bisexual. The three rows in the center represent an early pistillate. The row to the right is a mid-season bisexual. You will note that the flowers in the row to the left are all open. At this stage the anthers ripen and burst, from which comes the pollen that insures perfect berries with the pistillates. The pollen from this first row will furnish pollen to properly mate the bloom of the pistillates which are equally developed. The row of bisexual flowers to the right are just opening, and they will be fully matured at the time the pistillate flowers which are just opening will be ready to receive the pollen. Thus you will see why we advocate setting a pistillate in rows between two bisexuals, one a little earlier and the other a little later, and we feel confident that this illustration will make our method so plain that you will fully understand it.

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left for the future crop. Some growers keep the suckers out until the middle of June. While this is advisable as far as the present crop is concerned, it is rather late to be sure of producing good canes before the summer drouth comes on severe enough to injure them.

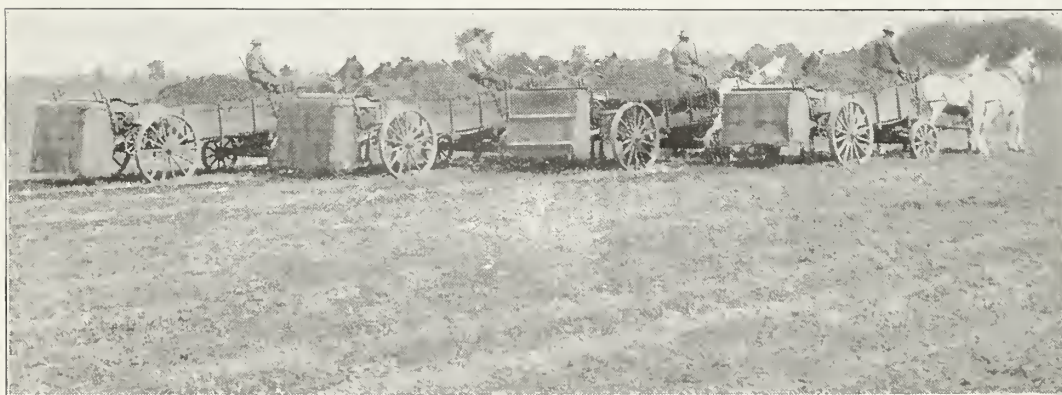
The vine producing sorts present rather a different phase of pruning. Instead of "pinching back" we endeavor to produce the required number of canes per hill, usually four, and have them as long and as strong as possible with a minimum number of laterals. In fact most growers recommend the removal of all laterals. Late in winter or early in spring these long canes or vines are cut back from one-fourth to one-third their length. The stronger the canes are at this time the longer and better will the fruit shoots be.

The black-cap varieties of raspberries should be pinched back early in the season in order to compel them to produce a strong framework for the support of the laterals and their shoots. Usually two or more pinchings are necessary to produce good plants of the cap sorts.

The dewberry is one of our recently introduced fruit plants, and while closely related to the blackberry it can be grown on a greater variety of soils and more severe climates than its tall relatives, the common blackberries. It is especially adapted to our gravelly soils where plenty of water can be supplied during the fruiting season. Its trailing habits makes it possible to grow it where the winter weather is too severe for the common blackberry, since it is easily protected by a light mulch of straw, leaves or any coarse litter. The dew-

berry should be planted in hills at least six feet apart each way, and given the same general culture that raspberries or blackberries are given. It requires no summer pruning aside from the removal of old fruiting canes after the crop is harvested, and while it is generally grown without supports, better results can be secured by staking and training to a single stake.

The Lucretia dewberry is the only variety that has produced desirable results so far in our work at the station. But this one has been a success in every particular. The fruit is large, rich, juicy, and of excellent quality. It ripens from a week to ten days earlier than the blackberry and



FOUR GREAT WESTERN SPREADERS AT WORK ON KELLOGG FARMS, THREE RIVERS, MICHIGAN Properly to distribute barnyard manure is one of the most important features of farm work, and the Great Western manure spreader, manufactured by the Smith Manufacturing Company, 158-164 East Harrison Street, Chicago, does the work to perfection. The R. M. Kellogg Company requires four of them. These machines tear the manure to shreds and distribute it evenly over the field. They are adjustable, so that as heavy or as light a dressing as may be desired is readily secured. This feature is of great importance.

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withstands dry weather much better. It is naturally very productive and has brought good prices in all the markets during the past three years.

The following list includes only such varieties as are found in home gardens and commercial plantations. These notes, upon which the conclusions are based, have been collected from all parts of the state:

Cuthbert—A chance seedling found by Thos. Cuthbert in Southeastern New York in 1865. The plant is a red raspberry, and one of our best growers, practically free from insect pests and plant diseases.

Crimson Beauty—Found growing in a patch of Imperials by Dr. Stayman of Leavenworth, Kansas. The plants are strong, erect growers, practically free from insect troubles or plant diseases, but never produce tall canes.

Improved Superlative—This is one of the new raspberries in Western Washington and while it has not been generally tested in many localities, yet wherever planted it has proven very satisfactory. The canes are clean, early maturing, and very productive. The fruit is large, of a dark crimson color, firm, and of fairly good quality.

Marlboro—Originated by Mr. A. J. Caywood of Marlboro, New York, as a result of several crosses with both tame and wild sorts. The plant is an exceptionally strong grower and while not as tall as some varieties, yet its few strong canes are frequently more productive.

Philadelphia—The original plant was found growing wild almost within the limits of the City of Philadelphia over sixty years ago. It is not a tall grower and produces few canes, but these are strong and branch readily.

Red Antwerp—Probably the oldest red raspberry in cultivation at the present time. It is a native of Europe that has been distributed under many names. While it is a standard of excellence wherever raspberries are grown, great care must be exercised in the selecting of plants for new plantations in order to avoid diseased or weak plants.

Ruby—A seedling of the Marlboro, originating near Marlboro, New York, about ten years ago. Although of recent origin this variety is rapidly becoming known as one of our best red raspberries.

Turner—Originated by Prof. J. B. Turner of Jacksonville, Illinois, about seventy-five years ago. The plants are extremely hardy, very rank growers, and entirely free from plant troubles.

Among the yellow raspberries are the Caroline, originated by S. P. Carpenter of New Rochelle, New York, from seeds

of the Brinkle's orange. The plants are fairly strong, erect, entirely free from insect pests and plant diseases, but not as rank growers as other varieties. The Golden Queen, a yellow fruited form of the Cuthbert found by Ezra Stokes of Berlin, New Jersey. The plant and canes closely resemble the Cuthbert but do not seem to be quite as thrifty or as productive.

Black raspberries were found wild near Aurora, Indiana, by Messrs. R. and I. Gregg, for whom it was named. It is probably our most popular and best known black-cap raspberry.

The Kansas, originated by Mr. A. H. Griesa of Lawrence, Kansas, is considered one of our best black-cap varieties, due in part to its vigorous, strong canes and plants, which make it very desirable, and also its resistance to disease, summer drouth and severe winters.

Burkhart—A chance seedling found about eight years ago, upon the farm of Rev. F. Walden of Zillah, Washington. The stock was turned over to M. E. Burkhart, who named the plant and is now disseminating it. It is supposed to be a seedling of the Gregg, which it resembles in some ways, but is far superior to it in others.

Mammoth Cluster—Originated from the old Miami at Collinsville, Indiana. It has been sold under various names, the most common of which is the McCormick. It is thought by some to be the largest and best black-cap in cultivation, but most growers seem to favor the Gregg. The plant is strong, vigorous, and very productive. Its fruit is large, firm, juicy, dark purple, black and sweet.

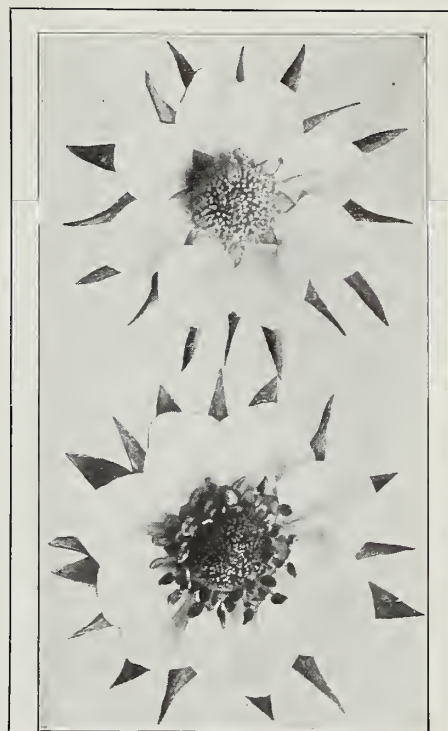
Ohio—It is not definitely known when or where this variety originated. But it has attracted wide attention as a market berry in many parts of the United States. While it is valuable for use in its fresh condition, its main value seems to be in its adaption to evaporating purposes.

Among the blackberries are the Early Mammoth, a supposed hybrid of the Wilson blackberry and the Eastern dewberry. The plant is a very vigorous grower of the viny group, frequently producing vines twenty to twenty-five feet in length in a single season. While it has not been fully tested, it has proved itself to be the earliest.

Evergreen, or Oregon Everbearing Blackberry—The origin of this plant is a much mooted question; however, it is probably a form of the common European *Rubus fruticosus*. It is a very vigorous grower of the viny group whose canes are more or less perennial in mild climates.

Himalaya Giant—Originated by Luther Burbank from seed secured in the Himalaya Mountains. It is a rank grower of the viny group, frequently producing canes from twenty to thirty feet in length, and resembling in many ways the Evergreen blackberry. The fruit is medium sized, black, juicy, of good quality, and ships remarkably well.

Kittatinny—Supposed to have originated from a chance seedling found in the Kittatinny Mountains of New Jersey. It is one of our oldest varieties of



The lower figure shown above is a bloom of the male strawberry plant. Note the ball-like pendants; these are the anthers which contain the pollen with which the stigmas of both the male and female plants are fertilized. The upper figure is a bloom of the female or pistillate plant. You will observe it has no anthers, but only stigmas. Through these stigmas the pollen of the bisexual plant is conducted to the pistils and thus are both male and female plants perfectly fertilized.

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blackberries and, while a very popular sort, it is not entirely hardy in most parts of the state.

Snyder—A variety found growing wild in Northern Indiana over fifty years ago. It is one of our oldest and most reliable market varieties and while it has certain objectionable features, such as sunburn and blackberry blight, in certain localities, yet there is no other single variety that fills the place now held by the Snyder. It is an erect grower, producing tall, vigorous, healthy canes, with large, strong foliage.

Stone's Hardy—A chance seedling found about twenty years ago. While it resembles the Snyder in many respects yet it is not so popular nor commonly grown. The plants are strong, vigorous, hardy, upright growers but not average as tall as the Snyder.

Loganberry—A hybrid of the Red Antwerp raspberry and a native blackberry or dewberry of California produced by Judge J. H. Logan of Santa Cruz, California. This is a remarkable plant in all parts of Washington for productiveness, hardiness, freedom from disease and insect pests, and ability to withstand drouth.

Phenomenal Berry—A hybrid of the Cuthbert raspberry and a native dew or blackberry of California produced by Luther Burbank of California. The station has not had the opportunity to give it a fair trial as yet but comparative tests are being made. The plant resembles very closely the loganberry.



THE BERRY PICKER'S PUNCH

This punch is used for punching out the number of quarts of berries gathered by each picker. It saves much time, avoids many mistakes and prevents possible misunderstandings with the pickers.

CURRANTS FOR HOME OR COMMERCIAL PLANTING

BY W. S. THORNER, HORTICULTURIST, WASHINGTON AGRICULTURAL COLLEGE, PULLMAN

THE following article contains the results of experiments and observations in connection with the investigation of the possibility of utilizing small and bush fruits as an intercrop in commercial orchards and for the home vegetable garden.

The currant is one of the few plants that, if planted at all in the home garden, is permitted to grow at will, usually more or less choked with grass and weeds, and rarely given any pruning or cultivation. While it will exist under such conditions, it rarely gives satisfactory returns and so for this reason is not generally considered a profitable commercial crop. On good rich soil and under thorough cultivation the currant may be made a profitable crop in many parts of the state.

The currant, like all other cultivated fruits, does not "come true" from seed, so, for this reason, it is necessary to propagate it by means of cuttings, layers or division.

The wood for cuttings should be of the current year's growth and may be taken any time between the falling of the leaves in the summer and the beginning growth in the spring. The strongest plants and most satisfactory results are usually secured from cuttings made early in the fall and planted immediately. The cuttings are usually made from seven to eight inches long. The lower end should be cut just below a bud while the upper end may be from one to two inches from a bud, depending upon the length of the wood. If the cuttings are made late in the fall or during the winter it is usually best to pit them in a callousing pit or pack them in damp moss or soil in a cool cellar until early spring. They should then be planted in deep, rich, moist soil in nursery rows three or four feet apart and the cuttings six or eight inches apart in the row. Plant down to the top bud, making the soil very firm around the base of the cuttings in order to prevent drying out during the summer months. After from one to two year's growth the plants will

be in excellent shape to set in the permanent plantation.

Almost any good, rich soil of sufficient depth and fertility to produce a good crop of grain will produce good crops of currants. While this class of fruit may be grown in hot, dry soil, the best results are secured on cool, moist soils. A well drained, rich, sandy loam with considerable humus in it, or even a clay loam properly treated, will give excellent results if there is plenty of available plant food. When the soil becomes very hot and dry during the summer it is sometimes advisable to mulch with coarse litter in order to hold the moisture and keep the temperature down. It is difficult, however, to grow good, clean fruit under these conditions. As a plant the currant is a heavy surface feeder, and so should receive heavy annual dressings of well rotted manure, or a substitute for manure in the form of commercial fertilizers.

One or two-year-old plants from cuttings or layers give better results for the permanent plantation. Most planters

down with the heavy crops of fruit. A better plan would be to place the rows eight feet apart and the plants six or

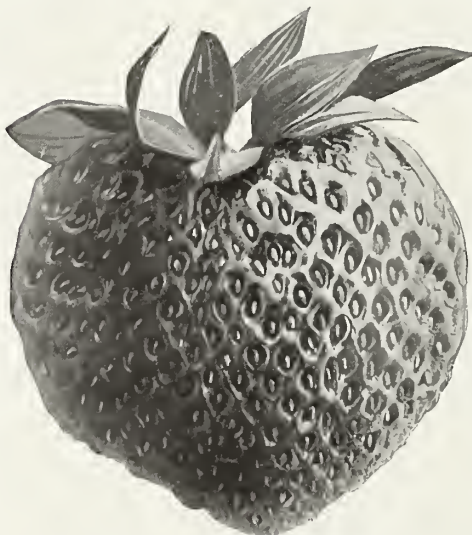


MARSHALL, B.

even eight feet in the row. This would allow room for thorough cultivation.

If the plantation has received an application of well rotted manure during the winter, this should be worked into the soil as early as the ground is ready to work in the spring. This may be done by shallow plowing or deep, double shovel work. After thoroughly working the manure into the soil the surface should be left smooth and as near level as possible. Regular surface cultivation should continue until picking time. After the crop is harvested, the plantation should again be thoroughly cultivated and then the plants permitted to become dormant and ready for winter. Late summer or fall growths should always be discouraged, as there is danger of fall or winter injury resulting from the unripened condition of the shoots.

The currant will bear some fruit every year whether it is pruned or not, but, if fine, large fruit is desired, pruning is necessary. There are two general types of training currant plants; i. e., the tree form and the bush form. The tree form is developed by cutting away all the shoots but one, and the removal of the lower buds and branches from this shoot for from twelve to twenty-four inches from the ground, which results in a little tree. This method does very well for the amateur or the novice, but is not practical from a commercial point of view on account of the unproductiveness of the plant and the danger of a borer destroying a whole plant instead of one cane, as is frequently the case with bush grown plants. The bush form is the more common method used, not only in commercial but in home gardens as well, and results in the development of a well-formed bush of from six to eight fruiting canes two to three years old, and from two to four young shoots or one-year-old fruiting canes. The common difficulty with the currant bush is that there is too much wood left annually



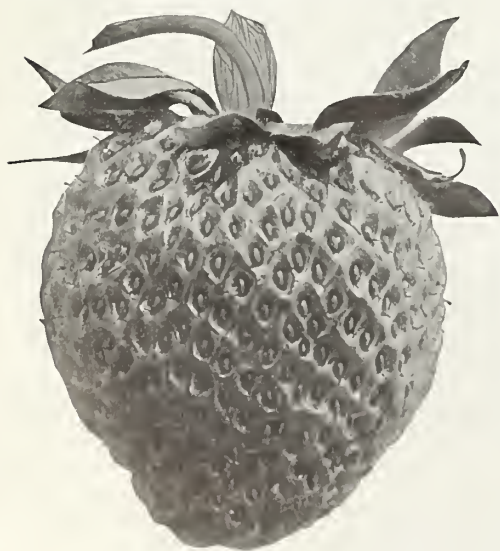
BRANDYWINE, B. (MALE)

prefer a one-year-old plant, as it is easier to handle than large two-year-old plants.

Early fall planting gives good results where the plants are mulched before the cold weather comes on, but for general planting, early spring gives the best results, especially where the stock is secured in the fall or winter and is set out just as soon as the ground is ready to receive the plants in the spring. Late spring planting is not satisfactory, since the rootlets and shoots of the currant begin to form early and are easily damaged in handling.

The same care should be exercised in transplanting a fruit tree. All broken or bruised roots should be removed, the top thinned and cut back and the plant set from one to two inches lower than it stood originally in the nursery.

The square planting plan of six by six feet is commonly used. However, it does not give sufficient room for the bushy sorts, especially after they begin to bear and the limbs become weighted



TEXAS, B. (MALE)

upon the plant, and so it is compelled to produce a great number of small berries instead of an equal or greater weight of fine, large fruit. While currant wood will produce fruit for an indefinite period of time, yet, after it passes its fourth to fifth year, it ceases to be valuable on account of the inferior quality of its fruit. Good, healthy wood produces its best fruit during the second and third years of its life and should be replaced by young shoots before it reaches its fifth year.

In ordinary field culture, from five to eight bearing canes on a plant will give better results than a greater number, especially where these canes have been summer pinched in order to develop strong lateral buds. If these shoots have produced strong lateral shoots they should be cut back to from three to four inches in length. For market purposes it is better to remove too much wood and produce a small quantity of fine fruit than not enough and produce an unsalable crop of small fruit. Pruning may be done in the fall or early in the spring. Ordinarily it is best to do it just before the plants start into growth in spring.

Since the currant is largely used for jellies and spice purposes, a rather tart fruit is more desirable than a thoroughly ripened fruit. For this reason, as well as the better shipping habits of slightly green fruit, currants should be picked just before they are ripe rather than after they have become fully ripe. Fruit picked while it is in cool ships much better than fruit picked during the heat of the day. Under no consideration must fruit be picked while it is wet with rain or dew, as it soon spoils if handled while wet. The bunch should be removed whole from the plant and kept whole, never shelling or stripping the bunches, as it is sure to lower the grade, if not ruin the fruit entirely.

Up to the present time there is no established method here in the West for marketing currants. The common 24-quart crate is extensively used and is undoubtedly the best and most adaptive Western package. A few growers use a ten or twenty-pound shallow box for near markets, but find it unsatisfactory

for long shipments. The pony refrigerator can be advantageously used for the fancy grades, but should not be used for anything but the best.

In 1905 the old Experiment Station plot of currants had become so badly infested with root borers and various other pests that it was deemed advisable to entirely remove it, destroy the plants and re-establish the work with new, young plants, and so, while our crop reports only three years' of work, yet they have been so uniform that it was deemed advisable to issue this report upon their behavior.

The size, color, productiveness and attractiveness of the Red Cross currant makes it an especially valuable new sort, while the mild flavor, productiveness and good plants of the Wilder places it at once among our best sorts. The older standard sorts like the Victoria, Pomona and Cherry are popular and very valuable for home as well as commercial purposes.

The following notes on varieties were secured from the plants in the Experiment Station grounds:

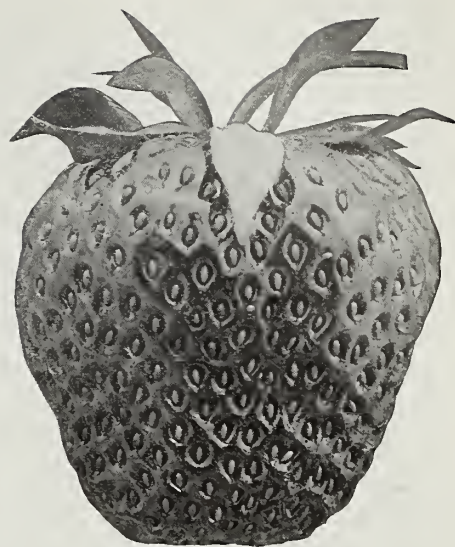


ENORMOUS, P. (FEMALE)

Cherry—A weak, spreading bush with long, strong canes, which frequently break in the wind. The foliage is dark green, abundant and practically free from disease. The berries vary in size from medium to very large, but are usually very large, of a dark red color and are borne in loose, short, poorly filled clusters. An early to medium, productive sort, valuable for home use but not good for commercial purposes because of its short-stemmed clusters, which makes picking rather expensive.

Comet—A medium to large, irregular-shaped plant, with good, strong canes and an abundance of dark green, healthy foliage. Berries are rather large, dark red, of a brisk acid flavor and borne in long-stemmed, loose, but well-filled clusters. A new, very productive, mid-season sort, not commercially grown.

Fays Prolific—Large, spreading, irregular-shaped bush with good, strong, erect canes and an abundance of large, light green, healthy leaves. The berries are large, of a dark red color, medium acid flavor, and borne on fine, long



KLONDIKE, B. (MALE)

branches. A very productive, late-season sort. Valuable for commercial as well as home use.

La Versailles—A large, strong-growing, irregular-shaped bush with good, strong canes and an abundance of large, dark green leaves. The berries are of medium size, a dark red color, with a brisk, acid flavor and borne in long, loose, poorly-filled clusters. A good market sort, commonly grown, but not very productive in many parts of the state.

London Market—A large, strong-growing, erect bush with slender, erect canes, which stand the wind well, but break very easily when handled during picking. The foliage is dark green, abundant and free from diseases. The berries are medium to large, of a bright red color, mild, subacid flavor and very attractive. The bunches are of medium size, short, compact and well-filled, making a very showy market sort. A very fine, mid-season, productive variety.

Long Bunch Holland—A rank-growing, stocky plant with short, heavy, erect canes and an abundance of dark green, healthy leaves. The berries are small, of a bright red color, rich acid flavor and are borne in long, loose bunches. A popular mid-season sort, but not so profitable as many larger fruited sorts.

Perfection—A large, strong, upright-



WILLIAM BELT



LADY THOMPSON, B. (MALE)

growing plant with erect, long, strong canes and an abundance of fine, dark green foliage. The berries are very large, of a bright red color, brisk acid flavor and are borne in short, compact, well-filled clusters. A new, very productive, mid-season variety. Valuable for home as well as market purposes.

Pomona—A large, rank-growing bush with erect, rather slender canes and an abundance of small, dark green leaves. The berries are medium to large, of a dark red color, a mild acid flavor, and are borne in long, well-filled clusters. A comparatively new variety for home as well as for market purposes.

Red Cross—A strong, erect-growing plant with stiff, short canes and an abundance of dark green, healthy leaves. The berries are very large sized, of a dark red color, a mild acid flavor and are borne in long, loose, well-filled bunches. A comparatively new variety that is rapidly becoming popular for market and home use on account of its large size and productive habits.

Red Dutch—A large, irregular-shaped bush with slender, long canes and an abundance of fine, dark green foliage. The new canes frequently suffer severe injury from the summer winds. The berries are small, dark red, mild acid and are borne in short, poorly-filled clusters. An old, very productive, and, while small-fruited, popular sort.

Victoria—A strong-growing, upright, productive bush, with heavy, upright canes and an abundance of dark green, healthy foliage. The berries are very large, bright red, of mild acid flavor and borne in rather small, poorly-filled, loose bunches. One of our best late sorts.

Wilder—An irregular-shaped, spreading, very productive bush with strong,



TEN CRATES OF COMMERCIALY PACKED STRAWBERRIES READY FOR SHIPMENT BY THE KENNEWICK FRUIT GROWERS' ASSOCIATION, KENNEWICK, WASHINGTON

spreading canes and an abundance of fine, dark green foliage. The berries are of medium size, dark red color, very mild, subacid flavor and are borne in loose, short-stemmed bunches. Its mild flavor and fine quality, with other admirable traits, makes this an excellent sort where a table fruit is desirable.

White Grape—A medium-sized, flat, spreading, very productive bush with long, slender canes and an abundance of

healthy, dark green foliage. The berries vary greatly in size, but average well, are of a bright greenish white color, and excellent quality. The bunches are long, loose and poorly filled. A very valuable sort for home table use, but not popular as a market sort. The yellow and white fruited forms of practically all kinds of small fruit are not as popular in the market as the bright colored sorts.

Black Champion (European)—A large, rank-growing, spreading bush with slender, recumbent canes and an abundance of dark green foliage. The berries are medium-sized, black, of good quality, and are borne in short, poorly-filled bunches. While a very rank grower, this variety is a very shy bearer.

Black Victoria (European)—A very large, strong-growing plant with strong, erect canes and plenty of dark green foliage. The berries are of medium size, pure black color and pleasant flavor. The bunches are medium sized but poorly filled. This is the best and most productive black sort tested. None of the black varieties are of commercial importance in the West but are occasionally grown for home use.

Crandall (American)—A large, rank-growing, spreading plant with long, strong, erect canes and a rather small amount of light green foliage, which is frequently diseased. The berries are variable in size, of a blue black color and rather sweet-flavored. The bunches are small, poorly filled and the plants are not very productive.

None of the Missouri Yellow Flowering currants are profitable for fruit production; nor should they be grown near the red or white sorts as they are nearly always the harboring places for the currant fruit worm, which is so hard to combat and does so much damage in many parts of the state



STRAWBERRIES AS THEY GROW IN THE BITTER ROOT VALLEY, MONTANA

PRESERVING FOOD FOR DISPLAY OR CONSUMPTION

BY A. W. MILLER, CURATOR PERMANENT EXHIBIT, CHAMBER OF COMMERCE, PORTLAND, OREGON

THE use of preservatives in food materials for consumption dates back to early civilization, while the art of preserving samples of vegetables and animal substances in order to appear in their natural condition for exhibition is of more recent origin. The object of all preservatives is to prevent decay either by fermentation or putrefaction, as they operate by destroying the life or suspending the activity of the decay-producing spores and organisms out of which they develop.

Though we have discovered means by which we are enabled to arrest the decaying process, as well as means of destroying the cause of decay, we are as yet unable to restore any substance to its former sound and healthy condition after decay has once begun. And in the preserving process we employ nearly as many formulas as there are materials to be preserved. As no two vegetable or animal substances contain exactly the same chemical compositions, consequently they require various kinds of preservatives; though the first and most important of all necessary to secure success lies in the proper selection of specimens intended for preservation, remember that success depends far more upon the selection and proper handling of the specimens than upon the formulas used, and here is where the majority make their most serious mistake, by leaving their fruits or vegetables to mature. In their anxiety to have them appear as large as possible, they overlook the fact that the instant any vegetable matures it begins to decay; therefore, all fruits and vegetables should be placed in the preserving liquor at least forty-eight hours before thoroughly ripened. First, select the specimens you wish to preserve while yet growing, examine them every few days, removing all that show any defects; then, some three or four

days before they would mature, prepare your preserving liquid. Have your jars all clean and ready. Take a pair of pruning shears and cut off the branch containing the specimens, and rinse



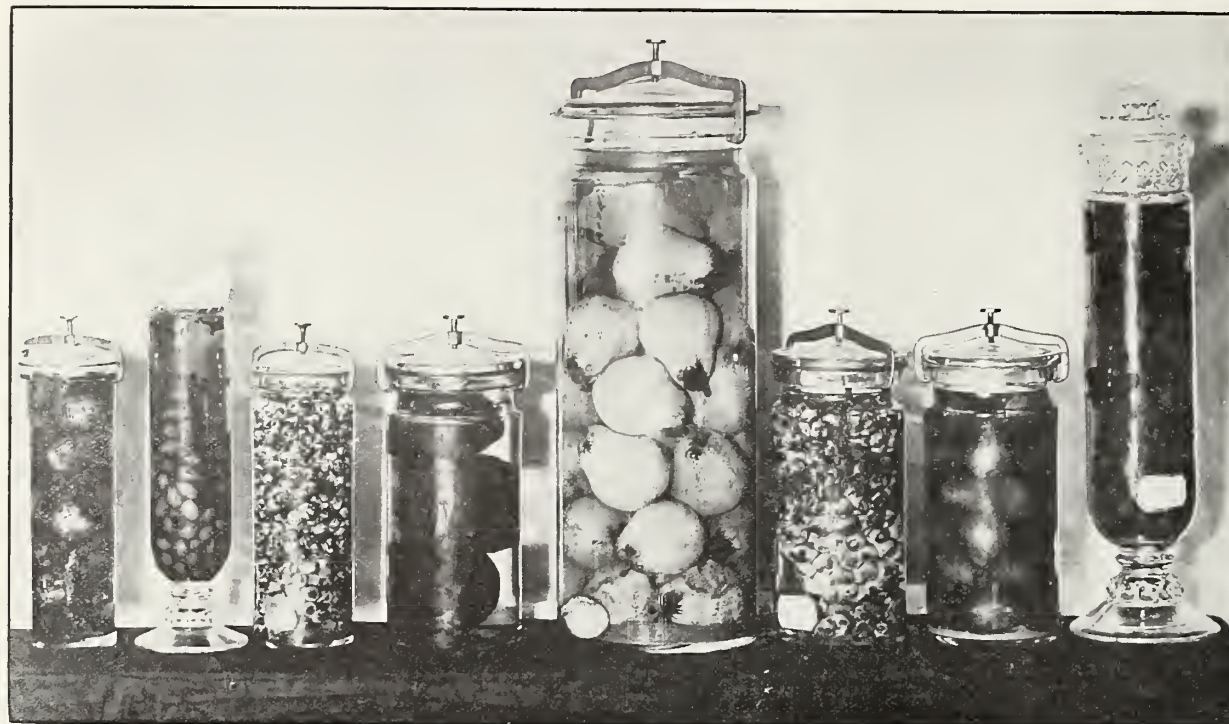
COLONEL A. W. MILLER
Curator Permanent Exhibits since 1892
Chamber of Commerce, Portland, Oregon

thoroughly with clear, cold water from a fine-roset sprinkling can or hose, in order to remove all dust, spores or other foreign matter. Then pick your fruit from the branch, by taking hold of the stem next to the branch. Avoid touching the fruit with the hands by wearing a pair of soft woolen gloves. Grapes, currants, and all bunch fruits should be left on the bunch after picking out the defective berries. Leave stems on all cherries and plums, which may be clipped off to one-half inch with the

shears. Though cherries, currants, dewberries, gooseberries, grapes, raspberries, strawberries, loganberries, and all kinds of blackberries, as well as figs, olives, almonds in the hull, and the smaller kinds of plums, like blue damsons and marribellas, show best on the branch or vine with just sufficient foliage to appear to an advantage. All fruits and berries on vines or bunches should be placed in tall jars by suspending from the top, with small end down, as well as such vegetables as beans and peas in the pod, while okra, green corn, celery, pieplant and asparagus should be with large end down, which, with all full-grown cucumbers, should be shown in tall jars. Always select your jars to correspond with the fruit they are to contain, and never use colored or bottle glass, but always crystal, as nothing so mars the beauty of a display as a great variety of jars in kinds and sizes, as any display looks better with jars of uniform size, with a variety of contents. Avoid putting large fruit in small jars, or small fruit in large jars. Put apples, pears, peaches, apricots, nectarines and the larger sized plums and prunes, as well as onions, potatoes, tomatoes, cucumbers and melons, sliced lengthwise, and all the larger vegetables, in large jars; while figs, olives, cherries, cranberries and the smaller kinds of plums and all berries not on branches should be placed in smaller jars. Having cleaned your jars, prepared your preserving liquid, selected and cleaned your fruit, place it in the jars (wearing woolen gloves), filling them as full as possible without in any way crowding or bruising or breaking the skin; then pour the liquid over them by straining through several layers of uncolored cheese cloth, covering the fruit well, and after the fruit is well set, add enough clear kerosene to cover about one-quar-



GRAIN IN DIFFERENT STYLES OF JARS



FRUIT PUT UP IN DIFFERENT STYLES OF JARS

ter of an inch, which will keep mould from forming on the liquid; fasten the lid, making it perfectly airtight; place in a dark place for thirty days at a normal temperature, between forty and sixty degrees; examine every few days to observe its condition. If found fermenting or discoloring, pour off the liquid, rinse the fruit and repeat the formula with variation of proportion of chemicals. The following are some of

the formulas that have been successfully used in preparing fruits for exhibition at the different expositions in the past. Among the most simple preparations in use are:

Dissolve one pine of pure, clean table salt in every gallon of pure water used. Let stand twelve hours, then strain it through several layers of cheese cloth and pour over fruit. This has been used successfully for cucumbers, squashes,

apples, quinces, onions, plums, almonds in the hull, peaches, prunes and all hard, smooth-skinned fruits and vegetables.

Berries and All Fruit—Clear water-white kerosene is frequently used with good results with strawberries, blackberries, raspberries and currants. Be sure that no drops of water remain on the berries.

All Fruits and Vegetables—To every gallon of water add one-half ounce corrosive sublimate. This has given good satisfaction with nearly all kinds of fruit and vegetables, and should be renewed frequently whenever the liquor becomes dim or clouded; and it must be handled with caution, as it is a rank poison.

Firm, Smooth-skinned, Dark Fruit—To every gallon of water add one and one-half ounces of formaldehyde. This does well for apples and all firm, smooth-skinned, dark fruit.

To every gallon of water add one quart of glucose and one-half ounce of formaldehyde. This does well for pears, peaches, prunes, figs, grapes, olives, currants, cherries and gooseberries, but not for phenomenal, logan, blackberries or raspberries.

Dissolve one-half ounce of bisulphide of soda in two fluid ounces of water; add this to ten gallons of water and one fluid ounce of alcohol. This has been used on all kinds of fruit with success.



PUTTING UP HIS FRUIT FOR EXHIBIT. A. W. MILLER AT WORK IN HIS LABORATORY

To every gallon of water add one-fourth of an ounce of salicylic acid and three fluid ounces of glycerine.

For Light Colored Fruit—To every gallon of water add two ounces carbonate of soda, six and a half ounces of potassium nitrate (saltpeter), and one and a half ounces of glycerine.

For Light Colored Fruit—To each gallon of water add two ounces of sulphur carbonate of zinc, one and a half ounces of potassium nitrate (saltpeter).

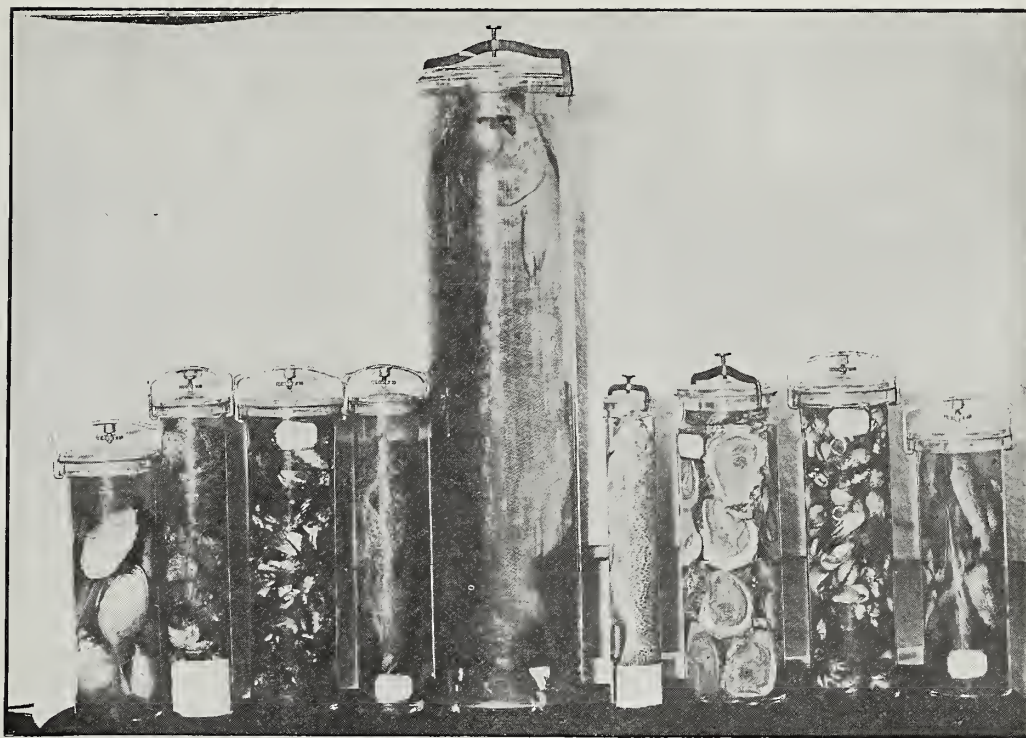
For Light Colored Fruit—To one gallon of water add two ounces of fresh sulphurous acid, stir well, cover the fruit several inches, then add one-half ounce glycerine.

For Dark Colored Fruit and Berries—To one gallon of water add six and one-half ounces of potassium nitrate, one-quarter ounce of formaldehyde and one ounce glycerine.

For all red fruit use two ounces of boric acid to one gallon of water.

For Berries and All Dark Colored Fruit—To one gallon of water add one pint of formaline and five quarts of alcohol.

To one gallon of water add three ounces boric acid, stir thoroughly until dissolved, then add one pint of alcohol and strain the liquor.



FISH PUT UP IN DIFFERENT TYPES OF JARS

For Red-Colored Fruit—Dissolve one-half pound of boric acid in fifty gallons of water.

For Green or Yellow Fruits—To one gallon of water add two ounces sulphurous acid.

To one gallon of water add one pint of sulphurous acid, one pint of alcohol.

For Yellow and Green Fruits—Dissolve one pound zinc chloride in two gallons of water, stir until thoroughly dissolved, then add three pints alcohol; let stand until clear, and filter.

For Light and Yellow Fruit—Dissolve one pound of zinc chloride in six gallons of water, and filter.

For Dark-Colored Grapes—Dissolve one ounce of salicylic acid in eight ounces of alcohol, add this to two gallons of water; allow to stand several hours before using.

For Fruit in General—To one gallon of water add one pint of glycerine, five ounces powdered borax; then, after fifteen days add two ounces formaldehyde to each gallon of liquor for dark fruits, and two ounces of sulphurous acid to all light-colored fruits.

For Fruit in General—One-fourth ounce of salicylic acid in one gallon of boiling water; add sal soda while the salicylic acid is dissolving, just enough to clear the liquid, as more will soften the fruit. This formula has been used successfully on all kinds of fruit.

For Fruit in General—To one gallon of water add one-half ounce formaldehyde and two ounces sulphurous acid, one pint glycerine for plums and prunes, two ounces glycerine for grapes, twelve ounces glycerine for apples and pears. After thirty days, should the fruit turn dark, pour off the solution, rinse the fruit with cold water, then cover with a solution of four and one-half ounces of sulphurous acid to one gallon of water.

For All Light-Colored Fruits—To one

gallon of water add two ounces sulphur carbonate of zinc, six ounces potassium nitrate (saltpeter), five ounces glycerine. Allow the fruit to remain in the solution for eight or ten days, then renew the solution, reducing the potassium to two ounces.

For Light-Colored Fruit—To each gallon of water add two ounces carbonate of soda, six ounces potassium nitrate, five ounces glycerine. In ten days (should there have been no fermentation or discoloration) pour off the liquor, rinse the fruit, repeat the solution with one-half ounce carbonate of soda and two ounces potassium nitrate.

The formula that has been so successfully used by the Germans on apples, plums, prunes, apricots, nectarines and all smooth, firm fruits, is by dissolving two ounces paraffine in one quart of boiling alcohol, or benzine; take hold of the stem and dip the fruit slowly into the solution several times; then suspend in the cool, open air several hours; place in the jar and gently pour over them cold water in which salt or powdered alum



About two weeks after plants are set, you should relieve them of the fruit buds. The dotted line shown on the above engraving indicates where the fruit stem should be severed from the plant. This throws more strength to the young plant, which encourages a rapid, vigorous growth.

KELLOGG ALL-METAL ONE-PIECE DIBBLE
This is their new one-piece dibble—no rivets to come loose or handle to break off. It is made from the very best grade of steel, with polished blade and japanned handle, which is simply a curve in the same piece from which the blade is made. It does not tire the hand and is in every way superior to any other dibble ever put on the market. For setting strawberry plants and all kinds of vegetables it has no equal, and no one should attempt to make a garden without it.

has been dissolved in the proportion of five ounces to each gallon of water.

Another German method for apples, pears, cherries and all sweet fruit is to dissolve one pound of white beet sugar in one gallon of hot water, then add one-half ounce salicylic acid, previously dissolved in sufficient glycerine; let the solution cool to 100 degrees and pour over the fruit, covering it well.

For all common vegetables, after having thoroughly cleaned them, add one and one-half pints of sulphurous acid to ten gallons of water, covering your vegetables well, and change the liquid as often as you notice any discoloration taking place. Green corn should be changed in two weeks from a sulphurous acid to a sulphuric acid solution.

After your fruit is set and needs no further attention, pour into each jar sufficient kerosene to cover the solution from one-eighth to one-quarter of an inch, which will prevent the forming of any mould or scum in the jars.

And in order to prevent apples, pears or smooth-skinned fruit from shrinking and cracking, soak some two weeks in some kind of vegetable oil before preserving. This should be done with all fruits taken out of cold storage.

The above formulas are recommended for the reason that they have been employed successfully by those experienced in the art of preserving fruits for display at the various expositions. Nevertheless, in putting up fruit for exhibition it is necessary for even the experienced to continue experimenting by practical tests, in order to produce the best results, and I would suggest that the number of the formula to be used be put in small figures in one corner of the label, as by so doing one will always know which has proven the most successful and which is the one for you to use. Always use distilled or boiled water if possible, but never use rain water or that from a pond or that which has become stagnant.



STRAWBERRY FIELD AT PICKING TIME, KENNEWICK, WASHINGTON

The purpose of borax is to harden and set the color and preserve the size and shape. That of acids is to preserve the color and destroy the bacteria that produce decay, while the purpose of glycerine is to give the solution the same density as the fruit. And as the specific gravity of various fruits differs, it would be well to use a trifle less glycerine than prescribed in the formula and add to it as the fruit shows signs of cracking; but if too much is added the fruit will shrink and shrivel. Therefore, it is best to begin with a less amount and add to it as required.

All fruits and vegetables put up for display should have the same density as the preserving fluids or they will either sink to the bottom and be crushed out of shape, or will rise to the top and become mouldy. To prevent sinking, add glycerine as required. And should the fruit rise to the top, pour off the

liquid and renew the formula, omitting the glycerine, which can be added later, should any of the fruit sink to the bottom.

As all fruit should be suspended in the liquid to show off well, a good way to test the density is to drop a specimen of the fruit in the liquid while mixing, and if it neither sinks to the bottom nor rises to the top, but floats in suspension, it is of the proper density. Or, another way to ascertain the density is to crush some of your fruit, then press out the juice by twisting the pulp in a coarse cloth or burlap, then test with a hydrometer, and notice the "B" (Baum). Then, in preparing the preservative add glycerine or glucose until the hydrometer shows the same "B."

All fruit should be kept in a dark place for thirty to sixty days, and at a temperature ranging from 40 to 60 degrees when not on exhibition; and while exhibiting avoid placing in strong sunlight or where it is likely to become overheated.

Grain and Seed—All grains and seeds intended for display should be well cleaned of all chaff, husks and dust, and thoroughly dried and shown in tall flint or crystal glass jars or tubes. Place a stock of grain with a perfect head in the tube. Have the stock about two-thirds the length of the tube, and on the opposite side from the label. Place a moth ball in the center of every pint or pound of grain, which will prevent the entering or breeding of insects in the jars, which should always be air-tight. The labels should always be at an equal distance from the bottom, and placed on a level with the eye while on exhibition.

Ripened corn shows best on the ear with the husks turned back and tied. Be sure that the corn is perfectly ripe and thoroughly dry. Make a solution of five gallons of water, into which stir one-quarter of a pound of resin soap and add one-half pound of corrosive sublimate and four ounces of white arsenic. Mix well and when discolored dip your corn in the liquid slowly a number of times by the husks, after which it should be hung up to drain and dry. Corn treated this way with this solution will keep indefinitely and be protected against all pests



A PRODUCT OF YAKIMA, WASHINGTON, SUNSHINE, WATER AND SOIL

Continued on page 54

THE CULTIVATION AND GROWING OF DEWBERRIES

BY O. B. WHIPPLE, BOZEMAN, MONTANA, FORMERLY OF THE EXPERIMENT STATION, FORT COLLINS, COLORADO

AS COLORADO is noted for its variety of climates so is it remarkable for its diversity of products. We are fast learning that certain localities are best adapted to growing particular kinds and even varieties of fruit and the grower is to be commended who adapts himself to his environments and becomes a specialist. We have our recognized peach sections and we might, if we do not already, have our recognized dewberry sections. Probably the dewberry growers of the Plateau Valley, a valley tributary to De Beque, Colorado, and the Grand Valley proper, have gained a greater name for their dewberries than have those of any other part of the state, and it is the purpose of this article to outline their method of culture for the benefit of those similarly situated. Here, dewberries are grown at an elevation varying from 5,500 to 6,500 feet, and surely finer berries cannot be grown anywhere. Lower elevations, at least in the western part of the state, are not well adapted to the culture of this fruit on account of the extreme heat of summer, the berries are

short and seedy as compared with the long, luscious berries grown at higher altitudes. The fruit seems to develop best where the maximum temperature is not above 90 degrees, and probably maximum temperature is a better guide than elevation. It must not be inferred, however, that dewberries may be grown in all localities favored with such summer temperatures; severe, drying winters may prove too trying for dewberries in localities otherwise well adapted to their culture.

That dewberries may be grown profitably in localities where the maximum temperature often runs above 95 degrees in the shade during the picking season, is proven by the returns from a plantation near Fruita, Colorado, in the season of 1908. Here three-quarters of an acre produced 345 crates of berries and brought a gross return of over \$650. The berries were not as large as those grown at higher elevations. The variation in season in different localities is better understood when we say the picking season at Fruita extended from July 7 to August 1, while at Plateau City,

Colorado, Mr. Baldrige's patch was at the height of its season on August 1.

Although Card, in his "Bush Fruits,"



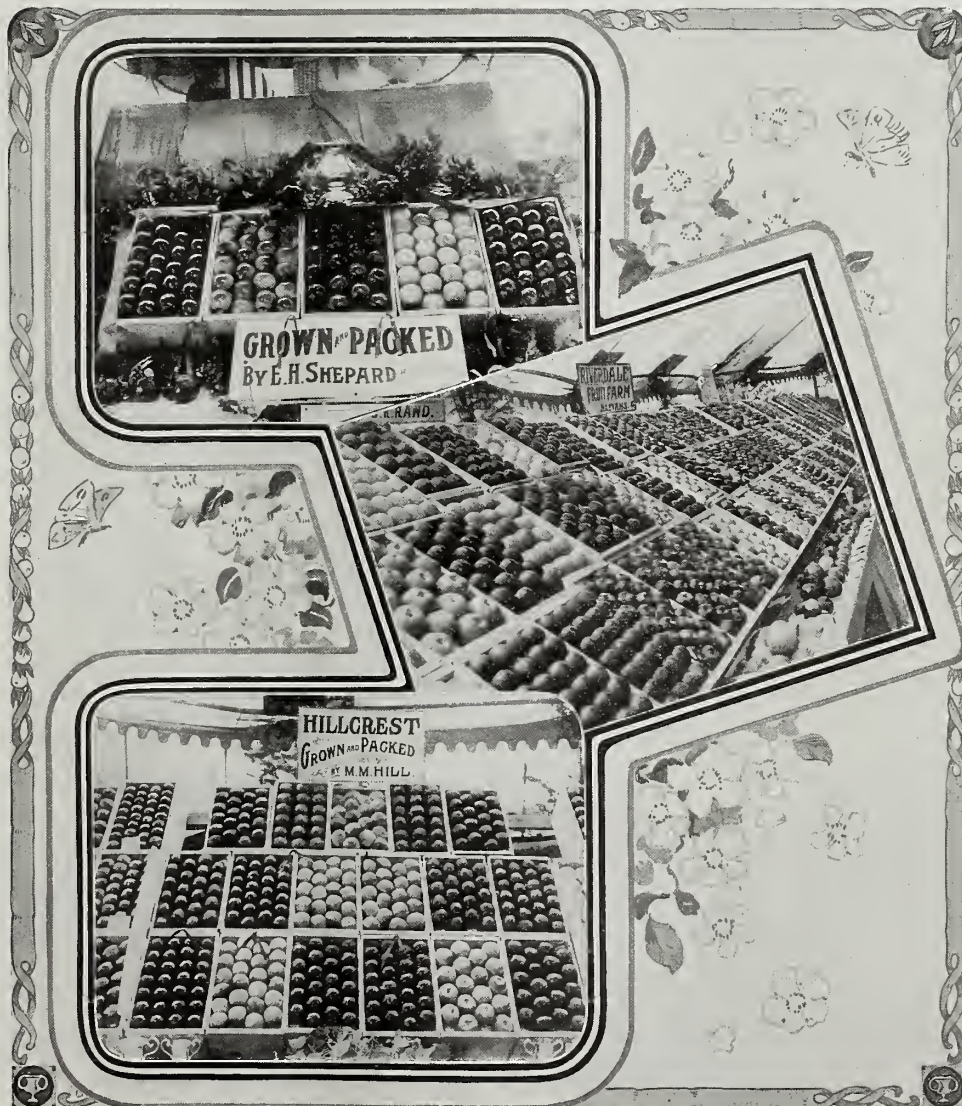
DEWBERRIES GROWN AND PACKED BY JAMES P. BALDRIDGE OF PLATEAU CITY COLORADO

Photo by O. B. Whipple

seems to doubt the value of the dewberry and suggests that its place may yet be taken by some early ripening blackberry, there is no danger of such a change of favor in Colorado. It ripens earlier than most blackberries and the plantation is much more easily handled. It is in a class by itself and unfruitfulness due to lack of proper fertilization or other causes is a misdemeanor of which the Colorado dewberry, in suitable locations, is not guilty. At present, however, the acreage of dewberries that can be profitably grown will no doubt be limited by the short life of the berry in transit and hence the accessible markets. As yet we have not learned to ship the fruit any great distance—it may almost be said that they must be on the market within thirty-six hours after picking. Unless by some means we can lengthen the life of the fruit in transit, over-production may easily take place. For this reason it is encouraging to think that the industry is new and that probably much is to be learned about the proper handling of the fruit for shipment.

Quite a variation in season may be found in different sections and altitudes, and all dewberries do not necessarily come into competition.

In its wild state the dewberry is found growing on comparatively light, sandy soil, and if this is significant it would suggest that our sandy mesa soils are best adapted to its culture. Yet in Colorado, the dewberry, like our tree-fruits is grown on almost any kind of soil. Considered from the standpoint of both ease of culture and adaptability, however, sandy soils free from rock or gravel are best adapted to dewberry growing. Since the plants must be covered for the winter, and as they are generally covered with soil about them, any considerable amount of gravel or rock



EXHIBITS AT THE HOOD RIVER BIENNIAL FRUIT FAIR

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is undesirable. In the introductory remarks it has been suggested that the dewberry does not develop well in a hot climate, and here it may be said that much is gained by choosing a northern exposure wherein to set the dewberry patch. Growers recognize this as an important point, for the fruit not only develops better, but the vines get through the trying days of winter and spring with less injury.

The dewberry may be propagated by layering the tips or from root cuttings. In fact, the plants are so easily secured that one can usually get them from a neighbor's plantation more easily than from a nurseryman. If plants are required by the wholesale a good plan is to plow a furrow along the row, place the tips of the runners in this and turn a light furrow back upon them; the tips must be actually covered. This work should be done before the opening of the picking season in most altitudes, and the plants will be ready for next spring's setting. Deep cultivation that will dis-



DIGGING THE PLANTS

dewberry yield. Best stands are secured when the ground has been deeply plowed, well worked down and pulverized; no doubt fall preparation is advisable for spring setting.

The majority of our dewberry Leds are from spring settings, but many of our experienced growers seem to be of the opinion that fall setting would prove as satisfactory and would bring quicker returns. I see no reason for not setting in the fall; the plants would necessarily be quite tender the first winter, but could be well protected and should suffer no injury. Planting in the fall should be done in early September and spring planting as soon as the ground can be worked. As to distances for planting there is still some dispute; but, if the plants are to be allowed to grow prostrate, setting five feet by five feet seems to be the most satisfactory system. They can be pruned accordingly and cultivated either way. If grown on a wire trellis, rows six feet apart with plants three feet in the row would no doubt be a better system. When planted in the young orchard, the distance can be made such as to best utilize the space. There is no particular objection to planting dewberries in the young orchard but the grower is to be cautioned about crowding the trees, and advised that in most cases it is not a crop for the old orchard.

For planting, the ground is furrowed out one way and cross-marked. Plants are dropped in the furrows at intersections with cross-marks, and partially covered with the foot. The furrow is

turned back, the plants are straightened up, the soil

firmed about them, and the job of setting is completed by running water down the row. As with any other plant, the top should be cut back at setting time to offset the loss of roots in digging.

The cultivation of the dewberry patch should not be unlike that for any other bush fruit. It should be well cultivated in the early part of the season to keep down the weeds and conserve the moisture. Cultivation stops at the opening of the picking season and is resumed again at its close, continuing until the end of the growing season. Since deep cultivation which disturbs or breaks the roots tends to start objectionable plants in the middles, the early cultivations and possibly the later ones should be rather shallow. If the plants are allowed to run for the purpose of being trained on a trellis, cultivation must be in one direction; when checked equal distances each way the general plan is to keep the middles open only one way. While it may be possible to overgrow the plants by continual cultivation, it is better to counteract this by withholding water rather than by discontinuing cultivation. Good cultivation is no doubt conducive to vigorous, but not necessarily to rampant growth.

There are really no tricks in irrigating dewberries. The ground should be kept moist and in good condition during the early part of the growing season. The young plants will stand a good deal of

PACKING THE PLANTS
THE R. M. KELLOGG COMPANY, THREE RIVERS, MICHIGAN

water the first season. During the picking season it is the common practice to water after each picking, just a light surface watering. This supplies the roots with the needed moisture to swell the berries to good size and by keeping the surface of the ground moist the berries ripen better, there is less loss from the drying of the fruit. It would be a good plan, no doubt, to try to induce early maturity of the canes by withholding water after the close of the picking season. In localities where the winter snowfall is not great dewberries should be given a late fall irrigation.

The grower of dewberries cannot expect that the plants will continue bearing good annual crops without fertilization. If properly cared for, there seems to be almost no limit to the duration of the plantation. Good stable manure is one of the best fertilizers for our Colorado soils. It may be applied in early spring before uncovering the plants, and the uncovering process as well as early cultivations will help incorporate it with the soil. Frequent light applications are preferable to heavy and irregular ones, as they tend to promote more uniform growth and yields.

In Western Colorado at least, dewberries are allowed to grow prostrate; growers say it is too expensive to trellis them, and it might be added that the present system seems highly satisfactory. No doubt, under certain conditions, trellising would be advisable, but

surely could not increase the yield any considerable amount. Where the plants are grown on a trellis, they receive no summer pruning as a rule; the new canes are allowed to trail on the ground under the trellis while the fruiting canes are tied to the wires. The only pruning the plant requires—unless it be a clipping back in August to induce early maturity—is cutting out the old canes in the fall or spring and shortening the new ones to three or three and one-half feet. A two-wire trellis is generally used, the top wire being about three feet from the ground. The training of the dewberry without the trellis requires a little more care in pruning but saves the labor of tying up and allows of early cultivation either way. The first pruning consists in tipping the new growths when they have attained a length of twelve or eighteen inches; the canes then stand upright above the old wood and the tips may be mowed off with a sickle or large knife. It is important that this pruning be done at the right time—do not wait until the canes are longer and then cut back to eighteen inches, or weak lateral canes will be the result. This early pruning forces out lateral canes and thus increases the bearing surface as well as stiffens the lower part of the cane, making it support itself better. The general practice is to prune the second time just before picking begins. The main object of the pruning seems to be to get the new wood out of the way of the pickers. At this time the lateral canes forced by the first pruning are

cut back to two or two and a half feet; they should be left long enough to shade the old wood and the fruit, yet short enough to be easily lifted by the pickers. This pruning must not be delayed too long, as it starts new growth which needs time to mature; at its best it is not satisfactory and it is probable that the growers will yet learn to avoid this pruning. The third pruning is done the following spring, and consists in removing all old canes and shortening in the new canes that may have grown too long. There seems to be no reason why this pruning may not be done before covering in the

fall, other than that the foliage makes the pruning more difficult.

The dewberry is not hardy in most parts of Colorado, consequently the canes must be covered during the winter. The difficulty seems to be that the canes do not mature well before frost and they tend to dry out during the dry winter weather. Just before the ground



IRRIGATION OF STRAWBERRIES

freezes it is the common practice to bunch together the canes from each plant and cover them with a light covering of soil. Where the vines are allowed to grow together in the rows, they are kicked apart, strung out, and covered in the open middle. The covering of dirt need not be heavy, just enough to hold the plants down throughout the winter. There is danger in covering the plants too deep, especially if they carry heavy foliage, as the canes are liable to become heated. The bare bases of the canes should be well covered. Most growers cover with a shovel, one man being able to cover about fifteen hundred plants in a day. It is essential that the vines be uncovered in spring before growth starts. The canes are not injured by light spring freezes, and the new growth that starts while the vines are covered is either



PICKING STRAWBERRIES ON EGAN-HAIR PLACE, WHITE SALMON VALLEY, WASHINGTON

turb or break large roots will cause many new plants to start. If an old bed is to be discarded, a good crop of plants may be secured by thoroughly plowing and working down the bed in the spring, allowing the young plants to spring up from the broken roots the following summer. Root-cuttings, from roots the size of a lead pencil, may be taken in the fall, stored in moist sand over winter and planted out in nursery rows the following spring. If these root cuttings are well cared for during the winter and planted three inches deep in a good soil, kept well moistened, a fair per cent will produce plants. Root cuttings taken in spring and planted in the same way will also give fair results. The dewberry does not sucker as freely as the blackberry, neither does it root as readily from root cuttings.

In irrigated sections the first step in the preparation of land for any crop is proper leveling. Low spots where water stands, or high spots difficult to irrigate, materially cut down the



CULTIVATING THE PLANTS

SPRAYING THE PLANTS
THE R. M. KELLOGG COMPANY, THREE RIVERS, MICHIGANMULCHING THE PLANTS
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Continued on page 31

GOOSEBERRIES FOR THE GARDEN OR ORCHARD

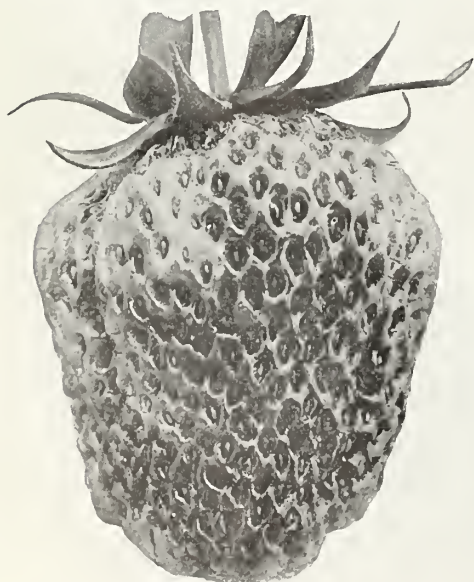
BY W. S. THORNER, HORTICULTURIST, WASHINGTON AGRICULTURAL STATION, PULLMAN

THE very rapid development of commercial orcharding in this state, resulting in the setting out of thousands of acres of fruit trees which will require from three to five years' growth before coming into bearing, makes the need for information concerning crops which can safely and profitably be grown between the trees in these young orchards, as well as in the home fruit garden, very apparent. This station has, therefore, established a small-fruit plantation in which investigations for this purpose are in progress. The gooseberry plantation has not been studied for four years, and this report of the notes taken from this plantation, or gathered from commercial orchards, is presented as a popular summary of the work up to date.

The gooseberry, unlike most American fruits, is sorely neglected here in the West, even though very attractive financial returns have been realized from this crop. Two causes are apparent for this neglect—one the difficulty of picking the fruit and the other the almost universal, but erroneous, belief that gooseberries are good only when used in their green state. Rarely or ever do we see ripe gooseberries upon the market, yet there is no better fruit grown for canning, spicing and preserving than our large, rich gooseberries.

Both the English and American sorts do well in most sections of the state, but in a few places gooseberry mildew does some damage to some of the English sorts, yet it can be successfully controlled by thorough spraying at the proper season.

A north or northeasterly slope is better for gooseberries than a southern slope on account of the advantages of late spring, more moisture and a richer, deeper soil. The gooseberry is very partial to a moist, rich, deep soil and prefers a thoroughly enriched, deeply tilled, well drained, strong clay to a light, sandy loam. However, it will do very well even on a gravelly, sandy soil.



MARK HANNA, P.

The general tendency is toward light crops on sandy soils, but the reverse is not always true on heavy clay soils. Gooseberries are especially adapted for the inter-cropping of young orchards since they will cheerfully submit to partial shade, providing it does not become so dense as to seriously encourage the gooseberry mildew.

While the cuttage method of multiplying the named varieties can be used the same as for many other plants, it is not so successful or satisfactory as the layerage method for the gooseberry.

Layering is accomplished by two common methods. One consists in bending the lateral shoots down to the ground and covering their tips with moist earth; the other, of mounding the entire plant with earth. The latter is the more simple and most rapid plan for a nurseryman to follow, while the former is probably best adapted for the amateur, who desires to secure a few for home use. The work of layering is done any time while the plants are in active growth, but gives better results when done in early spring than early summer. The rooted tips and layers are usually dug in the fall and either stored in a plant room or immediately planted in nursery rows for another year's growth. When planted in the fall they should be mulched to prevent heaving or winter injury.

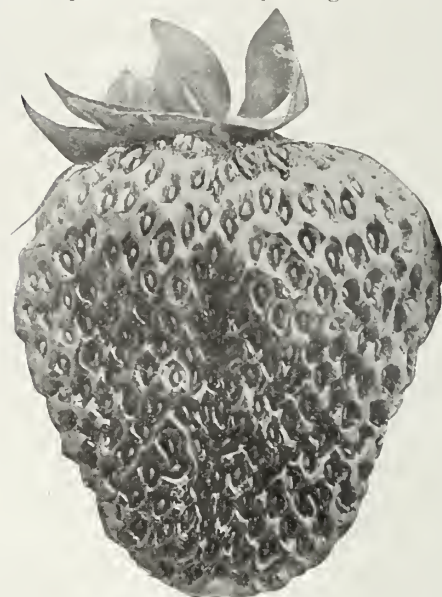
One-year-old plants from layerage will give better results than either younger or older plants. A well-rooted plant, even though the top is small, is far better than a large top with a poor root. The early ripening of the wood in the summer and the long, leafless or dormant period preceding winter weather combine in making fall the ideal time to transplant gooseberries. The early shoots and root formation in spring, and the ease with which these are seriously injured makes late spring planting very unwise. If for some reason early fall planting is impossible, then very early spring is the next best time for planting.

The same special care should be used in transplanting gooseberry plants as is used in transplanting larger plants. The roots should be well spread out in a roomy hole, and never crammed down in a slit in the ground made with a spade. The soil should be firmed about the roots to prevent drying out, and when completed the plant should stand one to two inches deeper than it formerly stood in the nursery.

One of the serious difficulties of most plantations is that they are planted so close together that development of the plant is practically impossible. The square planting plan of six by six feet gives very satisfactory results except where the soil gets very dry during the summer and where the heavy annual rainfall produces an abnormally large wood growth. Under such conditions it is better to plant the rows seven or eight feet apart and still maintain the six foot space between the plants in the row.

Gooseberries are shallow rooted plants

but very heavy feeders, and so must be treated accordingly. Most of our soils need an abundance of well-rooted nitrogenous material to make them ideal for this class of fruit. Barnyard manure is some of the essentials for successful culture. The shallow rooting habits of these plants makes deep tillage close to



DORNAN, B. (MALE)

the plants not only impossible but dangerous, and should never be practiced after the plant has become established. Just as soon as the ground is dry enough in the spring the plantation should be thoroughly worked with a cultivator or disk, tilling as deep as the roots will permit, close to the plants. The subsequent tillage should consist of thoroughly working the surface with a shallow-working tool like an acme, spike tooth or spring tooth cultivator, every ten days or two weeks until harvest time, and then one or two good cultivations afterwards when the tillage should cease for the season.

A good heavy mulch of rotting straw is a good thing to hold the moisture and keep the soil cool, but attracts field mice and moles so seriously that the station had to dispense with it entirely. As a conservator of moisture clean tillage or the dust mulch is far superior to the straw mulch system.

If first-class, fine, large berries are desired the bearing wood of a plant must never be permitted to become old, weak or inactive. The essential thing is to keep the wood vigorous and not permit wood to accumulate in excess of the amount that a plant can thoroughly support. Weak growing plants and shoots should be severely cut back to compel strong growth.

Since it is impracticable to practice regular fruit thinning on gooseberries, a system of thinning when pruning should be practiced. This is accomplished by reducing the number of bearing canes from the large number usually found to from eight to eighteen, depending entirely upon the vigor of the plant. A

shoot should not be permitted to bear more than four crops of fruit, after which its place should be taken by a younger, more profitable cane.

The pruning may be done in the summer after the crop is harvested, but our best results have been secured by very early spring pruning, which produced a more vigorous wood growth than summer pruning and gave better fruiting spurs and wood. Proper pruning does much to simplify picking and if for no other reason the plants should be thoroughly pruned every year.

A large part of the gooseberry crop is picked while the berries are hard and green, long before they have reached full size, which makes it possible to ship to distant markets in common carriers.

The picking of many American sorts is a tedious, slow, rather unsought task, but the large English sorts, on account of their size and few thorns, are comparatively easy to pick. Like currants, gooseberries should never be picked while wet or hot, since it very materially shortens their lives as a fresh fruit when handled in this manner. While the green fruit will ship long distances, the ripe will not and must be handled very carefully to avoid heavy loss in marketing.

The common method of marketing gooseberries here in the West is in the 24-quart crate, and while it is a little more expensive than the basket or flat box, yet it places the fruit on the market in first-class shape and nearly always gives better prices than other methods.

The experimental work with gooseberries extends over a period of four years and deals with only the more common varieties. The purpose of the work was to determine in a specific way the general behavior of a few common sorts under the treatment that they would ordinarily receive on the average farm. They were given first-class culture, but were never pruned, all faring the same in these respects.

It was found that by thoroughly spraying the plants in spring, just before the buds expanded, with lime-sulphur, that

the mildew could be entirely eradicated. This will probably extend the culture of the English sorts into sections where it has formerly been impossible to grow them with any degree of success.

The three best English varieties for our conditions are Industry, Portage and Whitesmith, while the three best American varieties are Downing, Josselyn and Houghton. The Carmen, Keepsake and Crown Bob are so seriously affected with mildew or anthracnose that it is not safe to plant them for either home or commercial purposes.

Carmen—A small, poor, unsatisfactory plant with short, recumbent canes and a small amount of yellowish green foliage, which is nearly always seriously affected with both anthracnose and gooseberry mildew. It is a light yielder of medium sized, yellow colored, poorly developed fruit, ripening about August 1. It is not preferable.

Columbus—A small, bushy plant with short, stubby, poorly grown canes and a fair amount of badly diseased foliage. The tips of the canes, the leaves and the berries are all more or less covered with mildew. The berries are very uneven in size, varying from very large to small, are of a greenish yellow color and have thick, firm skins. The plants are only fairly productive.

Crown Bob—A poor, unsatisfactory plant with short, slender canes and a small amount of badly diseased foliage. Both anthracnose and mildew seriously affect the fruit. The plants are moderately productive, ripening the fruit about July 15. The berries are large to very large, oblong in shape, of a deep red color, with thin, tough skin, and are almost covered with stiff, hairlike bristles. The size and quality of this berry makes it very popular in most markets.

Industry—A large, thrifty plant with good strong canes and an abundance of dark green, healthy foliage, entirely free from anthracnose and rarely if ever affected with mildew. The plants are very productive and the fruit ripens about the middle of July each year. The berries are very large, uniform in size and color, have thick, tender skins and a rich, sweet flavor. The size, color and quality of the berries and the productivity of the plants easily makes this the best European sort tested. Valuable for home as well as market purposes.

Keepsake—The plants are poor, small and unsatisfactory, with short, thick canes and a small amount of light green, badly diseased foliage. Both the mildew and anthracnose seriously attack the foliage, and the mildew practically ruins the fruit. The plants are fairly productive, but the fruit is very uneven in size and development, making it a very undesirable variety.

Lancashire Lad—A medium sized plant with short, stiff, erect canes and a fair amount of dark green, practically healthy foliage. The plants are moderately productive, but the fruit is always more or less injured by the mildew, thus making it unsalable. The berries are very variable in size, have a thick, heavy, dark red skin, and are of fair quality, ripening about July 15. Not preferable.

Portage—Medium sized, open, spreading plant with good, short, strong canes and an abundance of dark green, healthy foliage. The plants are very productive and the fruit ripens about August 1. The berries are very large, even in size, of a light green color, having thin, tender skins and an excellent flavor. One of our best all around sorts for both home and market purposes.

Carrie—A very hardy, large, spreading plant with strong, spreading canes and



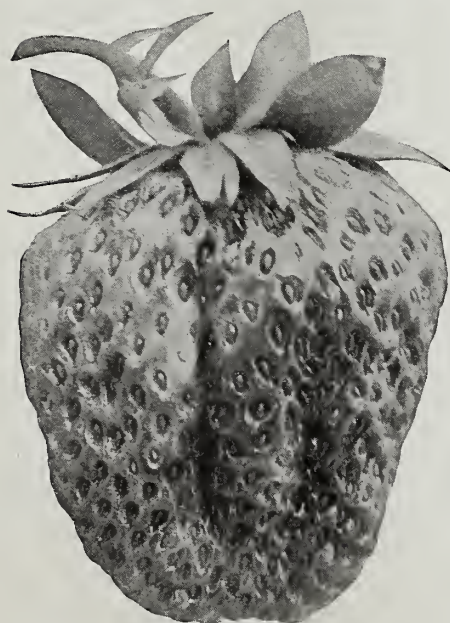
OREGON IRON CLAD, B.

an abundance of fine dark green foliage entirely free from both mildew and anthracnose. The plants are very productive and the fruit is free from disease, ripening about July 23. The berries are medium sized and of a light green color, with thin, tender skins and of excellent flavor. A valuable variety for unfavorable localities.

Downing—A very large, strong, free growing plant with long, fine canes and an abundance of healthy dark green foliage. The plants are very productive and the fruit is free from all kinds of disease. The berries are medium sized, of a light green color, tender skinned and have an excellent, mild flavor. One of the most popular and most widely grown varieties in the state. Valuable for both home and commercial purposes.

Houghton—A rank growing, thrifty plant with long, slender, recumbent canes and an abundance of healthy, dark green foliage. The plants are moderately productive and the fruit ripens about August 1. The berries are medium sized, thin skinned, of a clear green color and have an excellent, brisk acid flavor. One of our standard American sorts, but too small fruited for general commercial planting.

Josselyn (Red Jacket)—A large, strong growing, spreading plant, with long, recumbent canes and an abundance of fine, healthy, dark green foliage. The plants are very productive, ripening their fruit about August 1. The berries are medium sized, of a light green color, and have a thin skin and very mild, pleasant flavor. One of the best American sorts for home and commercial purposes.



PRIDE OF MICHIGAN, B. (MALE)

THE DISEASES AND PESTS OF THE STRAWBERRY

BY GERMAN KALI WORKS, NEW YORK

ALL of the ills of the strawberry may be directly traced to neglect in one form or another. The most common evil is due simply to starvation. The strawberry plant produces an enormous quantity of fruit on a very small framework, and starvation is very quickly followed by plain signs of impaired vigor or vitality. So general is incomplete fertilizing that it is common talk that strawberry beds are only profitable the first year. The following comprise the most injurious diseases:

Leaf Blight—This is recognized by the withering of the leaves, usually accompanied by the formation on the leaves of spots, brownish at first but soon becoming dry and whitish with a circle of red, and finally the entire leaf assumes a red spotted or red discolored appearance. The injury is caused in summer after the fruit is off by preventing leaf development and thus lessening the power of the plant to make a proper growth of fruit crowns for the next year. It generally affects plants which have made a heavy growth of foliage from a too free supply of available nitrogen and a lack of potash and phosphoric acid, especially if the new growth is suddenly deprived of free sunshine by a too heavy application of mulch. It seems sometimes due to a weakened vitality by deficient fertilization, but infested plants may communicate the disease to perfectly normal plants.

Infested beds may be moved in the fall and the leaves burned where they lie. Repeat in June, or as soon as the fruit is off, raking up the mulch to aid in the fire. Frequent and thorough spraying with bordeaux mixture is said to be beneficial. Spray every two weeks, commencing just after fruiting, and continue until fall. For the garden, the affected leaves may be raked out by hand and burned. Clean cultivation and destruction of old beds are material aids.

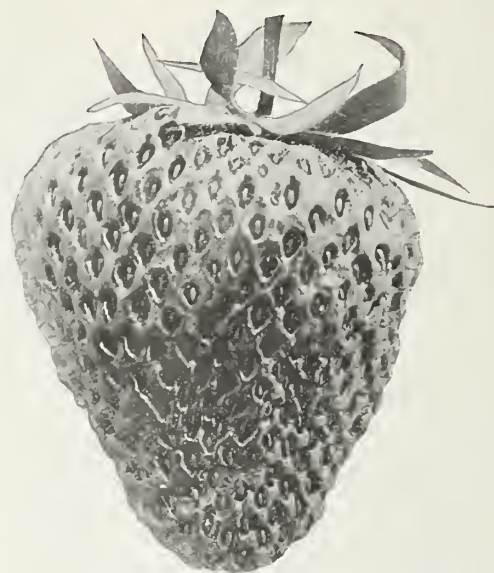
Dieback or White Bud—The first indication is the appearance in the center of the crown of young leaves of slightly reddish yellow or purplish tinge, and an unnatural crinkling of the leaf. The disease soon takes possession of the whole

plant, and all its leaves are greatly shrunken. The name "white bud" is sometimes given, from the bleached out color of the youngest central leaves of the crown.

The remedy is simple: Feed the plants. Kainit seems to be about the most effective single application and the quickest in its results, but do not apply directly on the plants. The whole secret is to furnish the plant something to eat as soon as possible.

White Grub—This grub, for whose existence the June bug is responsible, feeds on the roots of strawberry plants and generally begins its attacks in June or July. The leaves of the plants suddenly wilt, and a slight pull brings up the whole plant with but a fringe of its root system attached. The grub is a white or yellowish white worm, from one to one and one-half inches long, with a large chestnut brown head.

The eggs are deposited in untilled ground, especially in pasture fields or hay fields which have been carried over two or more years. The authorities claim



DOWNING'S BRIDE, P.

land a week before the plants are set cabbage leaves or small bundles of green grass which have been steeped in a solution of paris green. Make the distribution in the early evening. Do not follow a clover sod with strawberries, and you will have no trouble with the cut worm.

Strawberry Weevil—This is a minute beetle; the egg is deposited in the bloom just before it opens, and the stem is partially severed so that it may droop and stop growth in order to furnish food and protection for the young weevil. It may readily be recognized by the drooping immature buds. The attack is made as soon as the bud approaches maturity.

The food is largely the pollen, consequently imperfect (pistillate) plants are not injured. Clean and thorough culture is both remedy and preventive. The destruction of old beds and all infested beds is necessary. Practice a rotation. In the garden the plants may be protected by a covering during the blossoming period of light muslin or even old newspapers.

Strawberry Thrip—The injury is done to the blossoms, which wilt and die very quickly after the attack. In action this



NEW YORK, B. (MALE)

that a top dressing of kainit is beneficial, applied just before a rain. Fall plowing is effective. Do not use sod lands for strawberries until at least two years' cultivation occur before fruiting; even planting near a hay field is dangerous. Kerosene emulsion diluted ten times and poured on the surface of the ground around the infested plants will prove beneficial in garden culture. Clean culture is a preventive.

Cut Worm—This is a brownish green-spotted worm, about one inch long. It works chiefly in the early spring by neatly clipping off the roots of tender plants just at the surface of the soil or slightly below it. It is too well known to farmers generally to require further description here.

As with the "white grub," clean cultivation and the same preventive conditions apply to the cut worm. It is never bad in thoroughly tilled soil, unless near a pasture or hay field. Scatter over the



ARIZONA, B. (MALE) EVERBEARING



AUGUST LUTHER, B. (MALE)

pest is so similar to the weevil that it is sometimes claimed that the two are identical. The thrip is very small, about one twenty-fifth of an inch long, and of a yellow color. They eat of the stigmas, and the injury seems to consist largely in preventing the fertilization of the blossom.

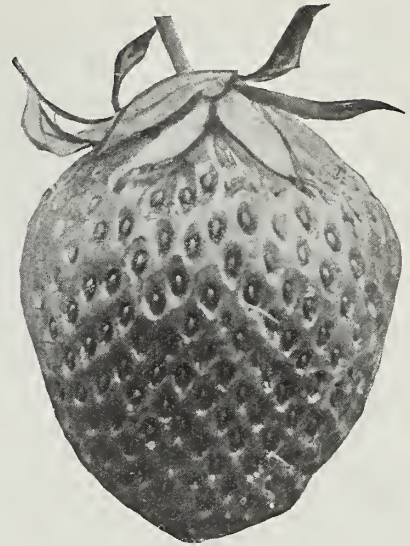
Thorough spraying with strong decoction of tobacco seems to be the only remedy (one pound of tobacco stems boiled thirty minutes in two gallons of water). The thrip readily moves from one plant to another, so that the whole field must be sprayed, and the dose repeated every three or four days.

Leaf Roller—This is a small greenish caterpillar which operates at the blooming period by rolling the leaf so that its usefulness to the plant economy is destroyed. It is very easily recognized,

and in garden culture the rolled leaves may be picked off by hand and burned.

Use a paris green spray early in the season, but do not continue it long enough to endanger the contamination of ripe fruit. Mow the infested beds and burn the leaves as described for "leaf blight."

Crown Miner—This is a small white or pinkish grub about one-fifth of an inch long. It injures plants by boring into the crowns of young plants. It is common in old strawberry beds. Practice rotation, as insecticides are ineffectual in checking it. Care in the selection of plants is a precautionary measure, while the best preventive is thorough and frequent tillage. The removal of the mulch as soon as fruiting is over is a preventive measure for many of the evils incident to strawberry culture.



SENATOR DUNLAP, B. (MALE)

COMMERCIAL FERTILIZER ON THE PACIFIC COAST

BY BARON HENFF, OF THE GERMAN KALI WORKS, NEW YORK

DURING a recent visit to the Pacific Coast States, made chiefly with an eye to agricultural conditions, I was much impressed with the interest shown

by farmers and ranchers in the use of commercial forms of fertilizers. Owing to a former connection with fertilizer control work, I perhaps gave more than a passing notice to this phase of the agricultural situation.

In many sections of the East and the Central West it is possible to judge crop and land conditions through a study of the amount and kind of commercial fertilizer used. This is not possible on the Pacific Coast, but at the same time the mere fact that the fruit growers of Oregon and Washington are taking an interest in the subject shows that even in this new country there is beginning to be felt a falling off in yields, due to cropping without any return of fertility to the soil.

The history of most sections shows that nitrogen is generally the first element of fertility to become exhausted, but this does not apply to the fruit sections of Oregon and Washington, for there orchards are established, and the demands of fruit are chiefly for potash and phosphoric acid. Indeed it is only a question of time until large quantities of potash will be required if the quality and color of Oregon apples are to be kept up to the standard.

In California fertilizers have been used for a greater length of time than in Oregon and

Washington, and a much greater variety of conditions are met with here. In the truck growing sections the fertilizer practice is very similar to that of the East, except that the applications per acre are not so heavy, although comparatively large doses of high grade goods of the various ingredients are used. In the various fruit sections there is a tendency to purchase the ingredients for home mixing, and with characteristic Pacific Coast individuality they have invented the term "Simples" to apply to sulphate or muriate of potash, bone, superphosphate, nitrate of soda, etc.

Apparently the fruit grower studied the subject in a more business-like manner than the general farmer, for he is anxious to apply only such goods as will give the largest returns on the investment, and if he can effect a saving thereby he is ready and desirous of purchasing the "Simples," usually dissolved bone, or bone black, sulphate or muriate of potash, and nitrate of soda, tankage, etc. As in the East, however, the knowledge and information concerning the action of potassic, phosphatic and nitrogenous materials is at a premium, and many farmers entertain wrong notions concerning the function of the "Simples" or ingredients supplying the elements of fertility.

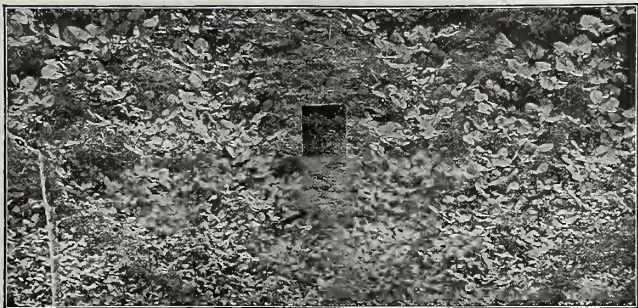
After a careful study of conditions, I believe that the man who is well equipped to farm scientifically can probably do as well in the Central and Eastern States as on the Pacific Coast. The probabilities are that unless he makes a strike of rich virgin soil he will have to come down to Eastern methods. In any case this will be the result sooner or later. The demands for nitrogen, phosphoric acid and potash are the same the world over, wherever crops are grown, and the progressive farmer will procure and return these elements to the soil without waiting for reduced yields and inferior quality of crops to remind him that his land is becoming impoverished. By returning to the soil a little more than the plant food taken off in the crop, and by practicing a proper rotation, the farmer can not only stave off soil exhaustion, but actually enrich his land while growing bountiful crops.



WITHOUT FERTILIZER



WITH PHOSPHORIC ACID AND NITROGEN



WITH POTASH, PHOSPHORIC ACID AND NITROGEN

ILLUSTRATIONS SHOWING EFFECTS OF FERTILIZERS ON STRAWBERRY PLANTS

EXPERIMENT BY PROFESSOR E. LIERKE, GERMANY

RELATION OF AGRICULTURE AND STATE IN EUROPE

BY SELDEN F. SMYSER, NORTH YAKIMA, WASHINGTON

THERE is much in the relation of the state to agriculture in Europe to interest both the student of political institutions and the man who is interested in the progress of agriculture. There has been a quiet development of methods and institutions which are worthy of the closest study by Americans. These methods and institutions are in many cases thoroughly democratic. In fact, they seem to present a finer and higher development of democracy than is to be found even in the initiative and referendum of Switzerland, of which so much has been heard. Yet information concerning the democratic organization of agriculture in Europe is neither widespread nor generally accessible in this country. This development has come about without reference to political theory purely as a means of advancing agriculture or small industries. In fact, Switzerland, politically the most democratic country in Europe, has rather a less democratic organization for the promotion of agriculture than have the monarchies of Denmark, Holland, Wurtemberg, Austria, Prussia, Hungary, etc.

It is the purpose of this paper to explain in part these institutions which are developing in many European states, through which the state is brought into close co-operation with democratically organized bodies of agriculturists. The state is able through this machinery to consult intelligently and carefully both the interests and the opinions of its producing classes. It is able effectively to educate its productive classes and to learn from them. The relation of mutual helpfulness thus established between the government and the agricultural classes is very suggestive of the possible development of relations between the state and large class interests within the state and make such devices as "government ownership" and "state regulation" seem but crude devices, indeed.

We shall describe briefly a typical

organization which corresponds in the main to that of several European states, although it fits no one exactly. There is in each locality a voluntary organization of farmers which is known as the Local Agricultural Society or Chamber of Agriculture. These are federated and represented in a provincial society. These provincial societies are federated and represented in the National Society or Agricultural Union. This national body, or a committee of it, stands in very close advisory or consultative relation with the national department of agriculture. In Europe, where the responsible cabinet is common, these departments of agriculture are, of course, in close relation with the legislative branch of government. In this manner the agricultural interests of the country find a direct relation with government administration and legislation. In several countries the state never fails to consult the representatives of the farmers before taking action affecting them. Though it is free to disregard the advice of these representatives, it seldom ignores them.

This series of organizations exist not merely—not mainly—for the sake of representation in the government. They exist rather for the improvement of local agriculture. They exist as a means of co-operation, mutual education and for the furtherance of local exhibits, fairs, etc.

While these organizations—local, provincial and national—exist as a means of mutual aid for the farmers, and are used to secure systematic representation of agricultural interests in the state, they yet serve another very important purpose. To these societies the state delegates a considerable portion of the local administrative work of the department of agriculture. Sometimes, as in the case of Denmark, this administrative work of the department of agriculture is almost wholly given over to these voluntary representative organizations of farmers. This administrative work which is thus carried on for the state by voluntary organizations of its citizens is by no means limited to regulative and protective measures which have reference to the prevention of disease, etc. The state's financial aid to agriculture, which takes many forms, is frequently administered, largely or wholly, by these societies.

These organizations are the means of mutual education through conferences and discussion, through the services of experts brought to the people. They are the means through which the state encourages excellence in individuals by scores of kinds of prizes and medals. They have still another function which they exercise for the state—that is the systematic encouragement of co-operation among the people. They encourage and aid in the formation of co-operative societies for the production of agricultural produce—butter, bacon, eggs, etc.; societies for the purchase of agricultural requirements, such as seeds, fertilizers,

tools, etc.; and societies for the establishment of agricultural credit. The state does not usually grant financial aid to such co-operative societies directly, since they are trading companies seeking financial gain; but, recognizing their fundamental importance, the state grants aid to the agricultural societies which promote co-operation.

As in this country we have within the larger nation self-governing states which

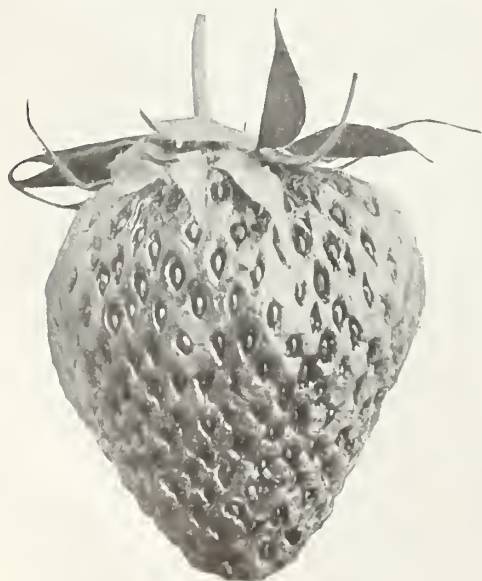


GLEN MARY, B. (MALE)

are independent of the general government in matters of purely local concern, so we may say that under many European governments agriculture is becoming a little state within the state, with considerable power of self-government in matters that concern agricultural interests only, and with the ability to command respectful consideration for its views when the question concerns agriculture and other branches of industry or departments of state.

Thus it comes about, since under cabinet government the ministers introduce legislation, that agricultural legislation is framed in very close consultation with elected representatives of that special interest. Besides the advice of these men who are general experts in agriculture, some of the ministers are still further aided by standing committees of technical experts who are especially qualified to advise in scientific matters. From this it may be seen that legislation concerning agriculture in these countries is being prepared under most favorable conditions. The results are such as might be expected. The remarkable progress made by Denmark, which has carried these methods farthest, perhaps, is in a general way known to all. We believe, however, that it is far from being truly appreciated or understood. The Danish farmer has advanced as rapidly as the Danish export trade in butter, eggs, and bacon has advanced. The general average of agricultural ability and intelligence of the

Continued on page 47



LONGFELLOW, B. (MALE)

LESLIE SALT

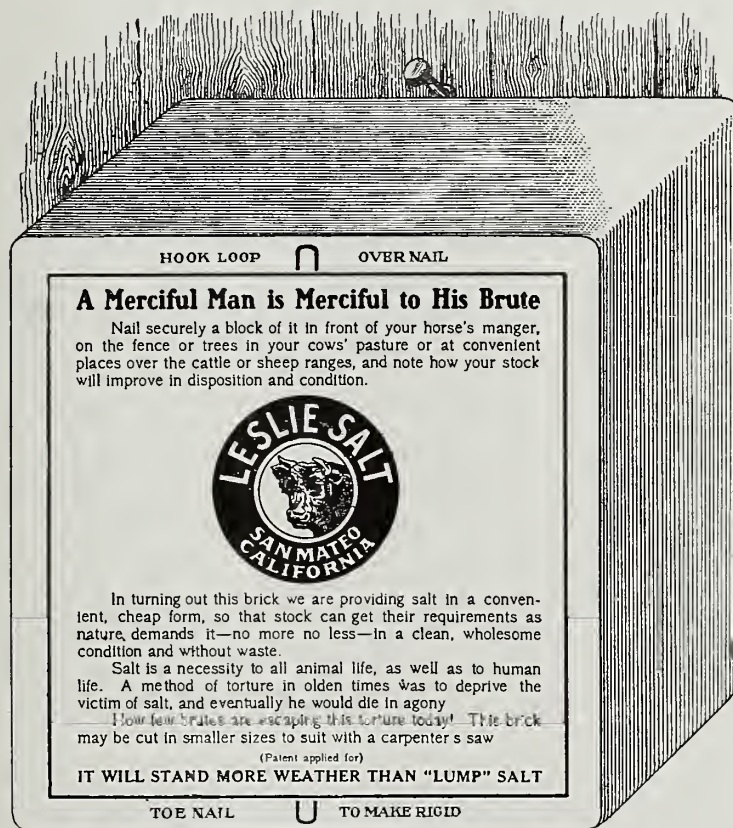
SALT—Is an absolute necessity to all animal life. An animal, to be thrifty and contented, must have access to it as nature demands—no more, no less.

Too much is only less harmful than too little.

Cleanliness—the first requisite of health—forbids its being fed in the manger or on the ground.

Economy requires that it be fed in the form of a "lick," and not in fine grains on the ground or in the feed.

The feeding of salt mixed with rations is pernicious and wasteful, as it is impossible to gauge the individual requirements, and if it is insufficient the animal will eat too much in order to get the salt, and if excessive will neglect the feed on that account.



The **Leslie Salt Lick** (patent applied for) provides for all of these conditions. It is a five-pound square brick as smooth and firm as marble and is provided with a wire hanger, so that it can be easily nailed up over the manger, on the sheltered side of fences or trees in the pasture, out of the dirt and readily accessible to the stock, that each can get its individual requirements—no more no less—in a cleanly, wholesome manner. While the first cost may be a little more than common "stock" or "lump" salt, the convenience and freedom from waste make the "**Leslie Lick**" the most economical in the end.

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C. E. Whitney & Co., San Francisco, California

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HOOD RIVER, OREGON

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THE NORTHWEST FRUIT GROWERS' ASSOCIATION

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PUBLISHED IN THE INTEREST OF MODERN
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Entered as second-class matter December 27, 1906,
at the Post Office at Hood River, Oregon,
under Act of Congress of March 3, 1879.

THE National Apple Show at Spokane, we understand, is set for November 14 to 19. Over \$20,000 will be given in prizes. All of the prize-winning apples will be shipped on a special train to Chicago and exhibited immediately after their arrival. Everything this year indicates that the apple show will be larger and more successful than ever before. We will give further particulars and fuller information in future editions of "Better Fruit."

Dufur Valley Fruit Growers' Union and Dufur Horsemen's Association will hold a joint show from September 13 to October 1.

West Montana will hold its second apple show the latter part of October or first of November. The premium list is now being prepared and will be larger than ever before.

Salem, Oregon, will hold its fifth annual cherry fair July 7, 8 and 9. It promises to be a magnificent exhibition of cherries.

Yamhill County Fruit Growers' Association will hold another fruit growers' association and apple fair this year at McMinnville.

Ohio will hold its fifth annual apple show this year in January.

The Watsonville apple growers are preparing for a big apple week, beginning October 10, to be held at Watsonville. Watsonville raised about 4,000 carloads last year. The show promises to be a splendid success.

L. S. Donaldson Company proposes having an apple exhibition in Minneapolis during November and December.

Mr. Oliver D. Heffner will visit the different fruit sections to perfect matters for this show.

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THE May edition of "Better Fruit" has received more compliments than any other issue we ever published. We are very gratified over this, for the reason that it indicates an approval and endorsement of the country life idea and the beautifying of the country home, which was the purpose of the May edition. The demand for this issue was phenomenal and the extra number of copies we had printed were exhausted in less than a week. One news stand in Portland sold 250 copies in three days.

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THE outlook for an apple crop this year throughout the Northwest is good. Probably a larger crop than ever before on account of increased acreage, but we are justified in saying at the present time it will not be a bumper crop. Most varieties thinned themselves to one in a cluster and some clusters went off completely, consequently there is every reason to expect the apples this year to be of splendid quality and size.

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VANCOUVER, B. C., will hold an industrial, educational and agricultural exhibition in that city August 15 to 20, and will offer \$30,000 in prizes.

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E. H. SHEPARD, editor and publisher of "Better Fruit," desires it plainly understood that Better Fruit Publishing Company and "Better Fruit" is the sole property of E. H. Shepard, and that no one has had any interest in the said publishing company or said paper during its entire existence, except during the first six months, and during that time the only one interested in the paper was E. A. Franz. Three and one-half years ago Mr. Shepard purchased the interest of Mr. Franz, and at no time since has anybody ever owned any interest either in "Better Fruit" or Better Fruit Publishing Company, and it is not controlled or influenced by the interest of any individual, any concern, any city, any fruit section or any one state. And Mr. E. H. Shepard, editor and published of "Better Fruit," wishes it thoroughly understood that the paper is published in the interest of and for the benefit of the fruit growers, particularly in the Northwest, in the States of Oregon, Washington, Idaho, Utah, Montana, Colorado, California and New Mexico, and British Columbia, and in general in the interest of the fruit growers who want to do better work, adopt better methods and make better money out of fruit growing as a business.

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ASSOCIATIONS are being formed in nearly every fruit growing section throughout the Northwest.

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MR. H. M. HUXLEY, for three years manager of the Hood River Apple Growers' Union, resigned his position as manager of that association

so as to be able to superintend his own fruit ranch at Mosier, and has accepted the position as manager of the Mosier Fruit Growers' Association. Mr. C. H. Sproat, an apple grower of Hood River who has fifty acres in apples, and who for seven years has been a director of the Hood River Apple Growers' Union, has accepted the position as manager. Mr. Sproat is recognized as a man of good business experience, broad business judgment and conservative. The selection of Mr. Sproat, and his acceptance, meets with universal approval.

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THE Willamette Valley fruit growers held a conference at Salem with the object of establishing prices for the prune crop for the year 1910.

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MR. CHARLES W. WILMEROTH, who is well known in Chicago, on South Water street, as an apple dealer, has accepted the management of the Rogue River Fruit Growers' and Produce Association. The fruit growers of Southern Oregon are to be congratulated.

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WHILE the railroads succeed in affording transportation, generally speaking, for fruit growers in the Northwest, it seems to us that it would be good judgment for the fruit growers in different sections to get reliable data about the increased acreage of each year and to make conservative calculations as to how much acreage will come into bearing on successive years and to estimate approximately as possible what will be the number of cars shipped out of every railroad station, and submit these figures to the railroad officials, in order that the railroads may be advised in ample time to prepare the necessary number of cars to market the increased crops.

◆ ◆ ◆

BETTER FRUIT has published 12,120 copies every month this year. The paid-in-advance subscription list, built on merit, without premiums or cut rates, exceeded 11,200 the first of May.

◆ ◆ ◆

INDICATIONS point to a good crop of all varieties of fruit in the Northwest this year. The strawberry crop in every section was large, the quality very fine, and the weather has been ideal for harvesting and shipping.

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THE LABOR QUESTION.—In various districts this year, particularly in strawberry sections, where the season came with a rush, more or less difficulty was experienced in procuring help to harvest the crop without loss, consequently it behooves fruit growers to give this matter just and due consideration, with a view to engaging in advance of the harvest time sufficient help to harvest the crop in future years. California has experienced more or less difficulty in procuring sufficient help since the passage of the exclusion act with reference to Chinese. The Japanese have not come in in sufficient numbers, and where

and how sufficient help can be secured is at the present time an unsolved problem. The idea usually advocated by "Better Fruit," of small orchard holdings of ten, twenty and forty acres, in consideration of the possible shortage of help, seems to be well worthy of consideration. The grower with a small orchard is certainly in a position to give his orchard individual care and attention, which is necessary in order to produce fine fruit, and with a family on every ten or twenty acres it is a step in the right direction towards solving the help problem. It is generally the large orchards that seem to meet with the most difficulty in securing the necessary help. The orchardist with a family who owns ten or twenty acres, when it comes to thinning time is certain to be envied by the large grower, particularly when there

is a scarcity of help. The man who has a small orchard and a large family can come pretty near doing his own thinning, while the large orchardist will find it difficult to secure enough men for this line of work for a short period.



THE National Horticultural Congress to be held at Council Bluffs, Iowa, promises to be of unusual interest this year. The date has been fixed, we understand, from November 10 to 17.



THE Apple Growers' Congress committee held a meeting at the South-ern Hotel. The program has been outlined and date set for August 10 and 11. St. Louis will probably be chosen as the place of meeting.

RELATION OF AGRICULTURE AND STATE IN EUROPE

Continued from page 44

farmers of that country is almost as high as the general average of the butter or the bacon bearing the government high standard for the ordinary product, and high standard of intelligence for the ordinary producers, is something but slightly appreciated in this country. Nor is it much compensation that some American butter is as good, or better, than the best Danish butter. A wide distribution of agricultural ability is even more desirable than a wide distribution of wealth. To attain to such results as the Danes have attained, we need to understand the machinery and methods by which these results have been secured and how to adapt them to American conditions.

Fifteen years ago, Irish agricultural industries were sadly decadent. The demand for Irish products in England was very much less than it had been formerly. The trouble was not that Irish butter and flax were poorer than formerly when they had been greatly in demand, but that Denmark, France, Belgium and other countries had made great advances, while Ireland had stood still. They supplied the demand Ireland had formerly supplied. Conditions were serious for the island folks. Fortunately, a number of public spirited men, under the leadership of Sir Horace Plunkett, united to investigate the causes of their distress, and to recommend measures of relief. Their investigation dealt with that system for the improvement of agriculture through organization, representation, co-operative administration and state encouragement which we have described above. In a report, which is as fine a study in statecraft as Bryce's American Commonwealth, they recommended a similar system for their country. In spite of some opposition, the system was adopted and is doing much for Irish agriculture. Winter dairying is being encouraged, co-operative creameries and bacon factories are increasing in number, co-operative agricultural banks are being established, the quality of Irish butter is being improved, and the farmers are learning how to work with one another for the general

good. The people are advancing as rapidly as their industries.

The methods of promoting the development of agriculture followed in Germany, Austria, Hungary, France, Holland, Belgium and Denmark, and which are now helping to relieve the distress of Ireland, may help to mark out more clearly the path of progress for Americans. For the methods and institutions referred to, seem, in their reliance upon popular initiative and in their representative or democratic character, to be more closely allied to American than to monarchical institutions.

How thoroughly representative of the people the government departments of agriculture are, may be seen from a few facts. The Belgian government board of industries and agriculture is composed two-thirds of delegates chosen by voluntary associations of the people and one-third appointed by the king. In Holland the government "agricultural committee" is composed of delegates from the different agricultural and horticultural societies. In Denmark, one of the three presidents of the Royal Danish Agricultural Society holds the official position of chief agricultural adviser of the government. He has direct charge of a number of government experts. In Wurttemberg there is a representative board of agriculture, and in Bavaria a representative supreme council of agriculture, to advise the government. Thus there exists, through the local and general agricultural societies, a direct connection between the farmers of many European countries and their governments which makes possible a harmony of action and a close co-operation between the state and its agricultural classes which, as yet, we in this country scarcely recognize as even a possibility—an ideal. It seems probable that, if American agricultural societies had some such functions and responsibilities as these foreign organizations, they might gain thereby a degree of vitality and influence which they rarely possess.

An illustration of mutual aid and co-operation which exists between the agriculturists and their governments is

found in the administration of laws and policies of the state by the voluntary societies. Denmark employs a number of agricultural experts, which are placed under the charge of a national agricultural society. They may be consulted through the society or directly by individual farmers. They are the advisers of twelve hundred or more co-operative dairies. They visit the stores of butter dealers, and if they find a brand of butter in stock which is not what it should be, they write or visit the dairy which made the butter and explain what is wrong. Butter exhibits are held to which various dairies are requested, on short notice, to send a cask of their latest churning. The verdicts of the judges are sent to all dairies represented. These government experts have sometimes gone abroad to advise and aid in the purchasing of live stock for the agricultural societies. They visit various countries to study markets, methods of handling produce, the demand of purchasers, etc., and aid by their advice and observations the producers at home.

The various countries of Europe have, of course, their experiment stations, example plots, farm schools, primary instruction in agriculture, agricultural colleges, forestry schools, etc. We do not discuss these here because they are in many respects like similar state institutions in this country, and because we are dealing here, not with all the methods by which the nations of Europe are promoting agricultural progress, but mainly with those methods in which the state and the people co-operate with one another in a systematic way. It may be said in passing that even in strictly educational matters, this principle is more common than it is in agricultural education in America. The practical schools of France illustrate this. The locality receiving this type of an agricultural school provides the land, buildings and equipment, while the state supplies the teaching force, the director and some scholarships. Frequently a local proprietor has supplied the material equipment. He may, in such case, be made the director of the school, for not infrequently he is a thoroughly trained agriculturist.

In Belgium the government will furnish a lecturer on fruit farming, provided the local community will provide a garden for experimental work, a hall for the lecturer and twenty or more regular attendants at the lectures. Other illustrations might be cited.

Returning then to methods of encouraging agriculture by the co-operation of the state with the people (usually organized into agricultural societies of some sort), we would speak next of the prizes, decorations, rewards, etc., which are given to encourage effort. A great deal of the financial aid to agriculture takes this form, and is administered through the agricultural societies. Sometimes, as in France, the amount of state aid given to any locality for such purposes is based upon the amount which is raised locally. In addition to liberal allowances for premiums or prizes for fine stock and farm products such as

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we are familiar with in this country, there is quite a variety of other prizes. There are prizes for well cultivated small farms. The prize may be in cash, a good farm implement, a well-bred pig, or some other useful thing. The prize may even take the form of a loan for some specific purpose, as for the drainage of a portion of the farm or for the erection of a building. This loan may later be made a gift if care of the property by the owner is satisfactory. The prize may take the form of an allowance for traveling expenses to enable the winner to visit other well managed farms at a distance. These grants may not be confined to farmers. The manager of a co-operative bacon curing establishment may receive a money grant to enable him to go to England and study the best methods to be found there. Every year the Royal Agricultural Society of Denmark advertises in the papers for candidates for spe-

cial grants among the dairy managers and dairy women. Some thirty or forty of the most desirable applicants are selected by the society and recommended to the government as worthy to receive government aid in securing special education for their work.

Continued in July edition

W. F. LARAWAY

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THE SCENIC
HIGHWAY



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A. D. CHARLTON

Assistant General Passenger Agent, Portland, Oregon

or

A. M. CLELAND

General Passenger Agent, St. Paul, Minnesota

HOOD RIVER



COMMERCIALLY—Hood River has received the highest price for apples over any other fruit section since 1900. One man has received \$1,900 per acre for his crop. The average profit for bearing orchards is \$500 per acre.

SOCIALLY—Hood River is the home of retired business men, professional men, men of character and ability; a University Club with 135 members, 117 of them fruit growers; a constant interchange of social life between the town and valley; your neighbors are intelligent, educated people.

SCENOGRAPHICALLY—Hood River Valley is one of the most beautiful valleys in the world; timbered hills, snow-capped mountains, raging mountain streams, splendid fishing and hunting; a superbly balanced climate, cool nights in summer, moderate winters; not a monotonous, eternal spring, but a place where the four seasons are known.

PROSPECTIVE—Plenty of good land awaits the man of push and vim, who desires to get back to nature to the greatest work in the world and allow his orchard to produce for him a handsome income in a valley that is the standard by which all sections are measured, where the experimental stage has been passed and success is proven and assured; the specialty valley where 90 per cent of the trees are Newtowns and Spitzenbergs; where only one kind of strawberry is grown, the Clark Seedling; the only section in the world where the fruit growers own their own warehouses, cold storage plants and irrigating systems. Electric lights, telephone system, and rural free delivery throughout the valley. Pure mountain drinking water.

WRITE TO THE SECRETARY OF THE COMMERCIAL CLUB ASKING FOR BOOKLET GIVING FULLER INFORMATION. HOOD RIVER, OREGON

THE OREGON APPLE ORCHARDS CO. ARE
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First-Class Apple Lands*

They lie on the east side of the Coast Range of mountains, at an altitude of 800 feet, and are in what is known as the frostless belt. They are also protected by hills higher up from the winds of the west and south. They have perfect air drainage, also water drainage.

The soil is a rich and deep loam, with no hardpan or rocks, and our lands are all cleared of timber and stumps, so are ready for the planting of the trees, losing you no time for the ground to be cleared. We expect to have the entire tract planted to trees this fall.

The land is offered for sale in tracts of five acres or more at \$250 per acre, planted and cared for for one year, and on easy payments, viz: One-fifth down and two per cent per month on the balance until paid for.

It lies in Benton County, adjoining Alpine station on the Corvallis & Alsea River Railroad, with R. F. D., rural phone, church, school, stores and all at the door right now (not to come in the future). We are also in the rain belt, getting an average of forty-four inches of rain each year, and never suffer from lack of moisture.

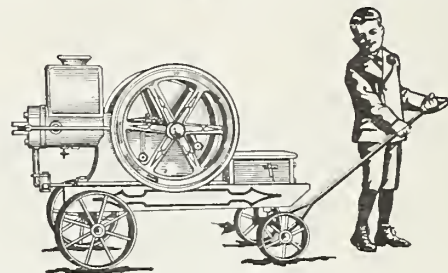
Our contract is a liberal one, granting deed when half paid for. Extension of time for sickness. Free deed in case of death. A receipt for your money in case you are unable to continue your payments, this receipt being accepted at face value at any future time on a new purchase. With all this, our section is less liable to apple diseases than most others, and our trees mature earlier on account of the long growing season.

Write us and let us give you facts about our section and also show you that we are selling our land for just half what others are charging. You read "Better Fruit," so you know what the returns are from a first-class apple tract.

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Does not burn foliage, and it will
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THE CULTIVATION AND GROWING OF DEWBERRIES

Continued from page 39

knocked off in the process of uncovering or is killed by the hot sun afterward.

In growing dewberries on a large scale one of the serious problems is that of securing pickers. The average picker will pick from five to seven crates a day, and this means that it will take from eight to ten average pickers to pick an acre per day. The general practice is to pick every third day, and the large patch may be divided so as to furnish the pickers employment every day.

The pickers must at least wear a glove on the hand used to lift the vines, and most of them wear a glove with the tips of the fingers removed on the picking hand. Some growers supply the pickers with a twelve-basket carrier, or two if

the pickers are fast and able to carry them. Others advocate the use of the regular shipping crate holding twenty-four baskets. A bale may be made of heavy wire bent in a way to clamp into the grooves that serve as handles in the end of the crate. Of course crates used to pick in cannot afterwards be used as shipping crates. The deck boards and baskets for the second tier are carried along and placed in position when the first tier is filled. In this way the picker carries a full crate in one hand and at the same time does not expose them to the sun for any length of time. A piece of heavy cloth large enough to cover half the crate may be tacked by two corners across the center of the crate

and used to shade one end of the crate while the other is being filled. The pickers should be made to grade the fruit, and the best way is to have them put the culls in certain boxes and pay them for picking these the same as first-class fruit. This plan provides a place for fruit the picker gathers and hates to throw away because it fills up. Dewberries should be picked when a full glossy black. Berries which have gone beyond this stage and turned a dull or more ashy color are too ripe to ship. The cull box is the place for over-ripe, dry, and poorly colored berries. Ripe berries start mould if packed for shipment.

Dewberries should not be picked when moist, as after a heavy dew or rain. Pickers are paid by the crate, thirty

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YOU CAN PICK FRUIT EVERY MONTH IN THE YEAR

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The Bitter Root Valley today is better known in the great cities of the East and is attracting more Eastern capital than any other fruit valley in the Pacific Northwest.

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The dependability of Malthoid Roofing has been proven by special tests covering a period of many years.

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Cheerful Homes

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it—and the second tier rests upon this. The crate is arranged in a way to give perfect ventilation, and good ventilation is essential in shipping dewberries. The general practice is for the pickers to sort the berries, and then all the packer has to do is to see that the boxes are full and not over-full, and possibly throw out a few defective berries overlooked by careless pickers. When packed and covered the crates should be ricked up end to end, preferably under an open shed, and allowed to thoroughly air out before shipping. If possible, it is a good plan to let them air over night and ship in the morning; unless well aired out the fruit molds in transit. Shippers should also insist on the car being well ventilated; icing only seems to aggravate molding.

As in the packing and grading of any fruit, the berry grower has an opportunity to establish a reputation for his product. So long as the number of dewberry growers is limited and the matter of grading and packing is not an association problem, the individual grower should put up a pack that he is not ashamed of and stamp his name and address upon the crate. Mr. Jas. P. Baldrige, the veteran dewberry grower of the Plateau Valley, and to whom I am indebted for much valued information and help in the preparation of this article, has adopted this plan and is known the state over for his dewberries. He could dispose of the entire output of his five-acre patch through mail and telephone orders, but prefers to let a

cents, if they pick part of the season, and thirty-five cents if they finish the season. If the grower does not protect himself in this way, some of the pickers will leave him when picking gets poor.

Since dewberries were first grown in Colorado several styles of packages have been used, but the crate known as the

double-deck raspberry crate and now commonly used, comes as near perfection as any. This crate holds twenty-four pint veneer boxes, twelve in each deck. When the bottom tier of boxes is in place a second bottom similar to the first is dropped in—the ends of the crate being supplied with grooves to support

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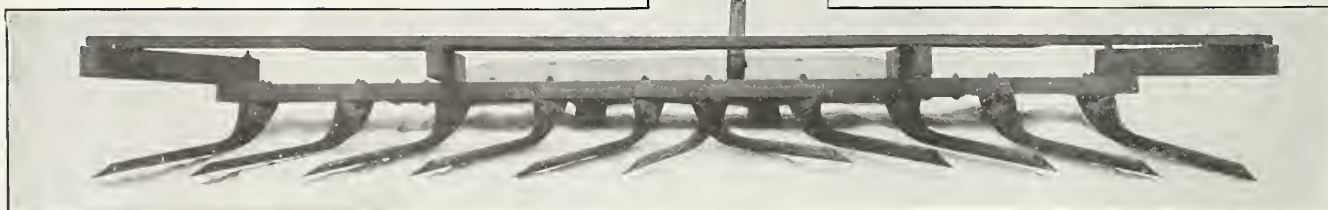
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CHICAGO, ILLINOIS

PRESERVING FOOD FOR DISPLAY OR CONSUMPTION

Continued from page 36

or insects. But it must be handled cautiously as the ingredients are deadly poison. Therefore, should be handled as little as possible and kept out of reach of children or other inquisitive persons, owing to its dangerous nature.

I will add a few "don'ts" which it would be well to commit to memory before beginning your work:

Don't let your specimens get ripe, but have them in the preserving liquor at least forty-eight hours before they would have matured.

Don't gather the fruit until you have the jars and liquids all ready.

Don't pull the fruit from the branch or stem, but cut off the branches and leave the stem on the fruit.

Don't handle the fruit with the bare hands; wear woolen gloves.

Don't forget that the large size is not as desirable as those of normal growth, as freaks are never perfect specimens.

Don't show the fruit on branch or vine without some of the foliage is left on.

Don't fail to properly label all the specimens, giving name, variety, location, where and by whom produced, and the date. And in the corner place the number of the formula used.

Don't expose your fruit to the bright rays of light, either natural or artificial, except when on exhibition. At all other times keep dark by covering jars in cool place.

Don't ever place near the stove or

steam pipes, but in a cool place, as the liquid cannot freeze.

Don't use soda or acid on dark fruit, nor formaldehyde or alcohol on light fruit (except in small quantities).

Don't leave any processed fruit or vegetables where stock or any person can eat it, as most formulas are rank poison.

Don't kill any fish or animal until all is in readiness for the preserving process.

Don't attempt to preserve meat of any kind until it has been thoroughly bled and cooled nor after it has become tainted.

Don't allow too many eggs to accumulate on your hands and become stale before you process them; but have them coated with the liquid glass as soon after being laid as possible.

And by all means, don't get discouraged if the first attempt does not prove successful, but keep on experimenting until you do succeed.

ORANGES AND FIGS

Are the big money crops. Growers in Galveston-Houston district realize from \$300 to \$1,000 an acre annually. Write today for full particulars how you can, without leaving your present home or occupation, participate in these large profits, and later become the owner of a bearing fig and orange orchard, should you desire to make your home in this beautiful country. The company is composed of leading bankers, business men and fruit growers of Houston and South Texas. Your investment absolutely secured; no speculation. Highest endorsement from bank officials and reliable business men. Booklet and literature free. American Loan & Mortgage Company, 107 American Bank Building, Houston, Texas.

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HOOD RIVER APPLE GROWERS' UNION, HOOD RIVER, OREGON

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Write above or write our St. Paul office for name of nearest distributor. We have been making chemicals for over seventy-five years. Insist on Grasselli Brand and get the benefit of this long experience by increased value of crops

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Medford Spray Co.

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NIAGARA Lime-Sulphur Spray

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TO

PORTLAND

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(Lines in Oregon)

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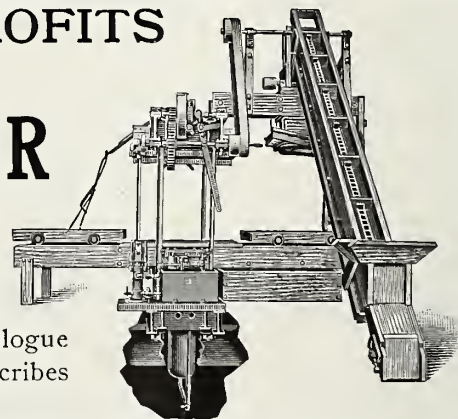


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FIRST AND SECOND SPRAYS FOR CODLING MOTH

BY C. P. GILLETTE, COLORADO AGRICULTURAL COLLEGE, FORT COLLINS

THE most important of all the sprays for the control of the codling moth is that which is applied to the tree just after the blossoms have fallen and before the calyx lobes have closed. The reason that it is so important to make a thorough application at this time is because, on an average, about 80 per cent of the worms for the year try to enter the apple at the calyx or blossom end. If the poison can be placed in the blossom before it closes, it remains there to catch the 80 per cent of the first brood. In doing this, the second brood is also lessened by 80 per cent. The poison then remains within the calyx to kill 80 per cent of the 20 per cent of the second brood that was left. It is also important because, if the poison is not applied before the calyx closes, the 80 per cent of worms that enter at the calyx then have free access to the apple without danger of being poisoned, and no amount of spraying afterwards can get them. So, after all, the best time to poison the worms that are to enter the apples at the calyx in August, September and October, is at the time of the first treatment, when the blossoms have nearly all fallen from the trees.

In order to get results it is necessary that this first treatment be made very thorough. By a thorough treatment is meant one that will fill practically all the calyx cups with the poisonous spray. In order to do this large trees will require anywhere from six to twelve gallons of

spray. The coarser the spray the larger the quantity it will require to thoroughly treat the trees. The spray, however, should be coarse enough to have good carrying power so that it can be driven into the blossoms upon all parts of the tree.

While making this first application some one who is directing the spray should occasionally thoroughly examine the blossoms on all parts of a tree just sprayed for the purpose of determining whether or not the liquid is being deposited in all the blossoms. Any man can test his work from time to time in this way if he chooses, and so be able to

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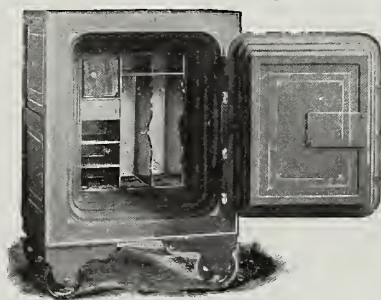
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know positively whether or not the work is being thoroughly done.

Avoid throwing a large amount of the spray directly upon the trunks and large limbs of the trees, because when this is done the poison is carried down about the crown, where it is apt to do serious harm poisoning the crown of the tree itself.

If this first treatment is very thoroughly done, I do not believe it is worth while to spray again until about four weeks after the blossoms have fallen, which will be approximately the date when the eggs of the first brood begin to hatch. A treatment at this time

should be made with a very fine spray so directed as lightly to cover all parts of the fruit and foliage to poison those worms that enter at the sides of the apples. With these first two treatments thoroughly made, as above described, the writer believes that we have the best possible condition for the destruction of the worms of the first brood. If the worms of this first brood are practically all destroyed, there could be but a very light second brood, unless the moths for the second brood of worms fly into the orchard from the surrounding orchards that have not been properly treated.

FRUIT GROWERS' ASSOCIATIONS AND UNIONS

WE PUBLISH free in this column the name of any fruit growers' organization. Secretaries are requested to furnish particulars for publication.

Oregon

Medford Fruit Growers' Union, Medford; Lane County Fruit and Vegetable Growers' Association, Eugene; Ashland Fruit and Produce Association, Ashland; Rogue River Fruit Exchange, Grants Pass; Hood River Fruit Growers' Union, Hood River; Hood River Apple Growers' Union, Hood River; Grand Ronde Valley Fruit Growers' Union, La Grande; Milton Fruit Growers' Union, Milton; Douglas County Fruit Growers' Association, Roseburg; Willamette Valley Prune Association, Salem; Mosier Fruit Growers' Association, Mosier; The Dalles Fruit Growers' Union, The Dalles; Salem Fruit Union, Salem; Albany Fruit Growers' Union, Albany; Coos Bay Fruit Growers' Association, Marshfield; Mount Hood Fruit Growers' Union, Mount Hood; Estacada Fruit Growers' Association, Estacada; Umpqua Valley Fruit Growers' Association, Myrtle Creek; Yamhill Fruit and Nut Growers' Association, McMinnville; Hyland Fruit Growers of Yamhill County, Sheridan; Newberg Apple Growers' Association, Newberg; Dufur Valley Fruit Growers' Union, Dufur; McMinnville Fruit Growers' Association, McMinnville; Fruit Growers' Union, Oregon City; Coquille Valley Fruit Growers' Union, Myrtle Point.

Washington

Kennewick Fruit Growers' Association, Kennewick; Wenatchee Fruit Growers' Union, Wenatchee; Puyallup and Sumner Fruit Growers' Association, Puyallup; Vashon Island Fruit Growers' Association, Vashon; Mt. Vernon Fruit Growers' Association, Mt. Vernon; Spokane Fruit and Vegetable Growers' Association, Spokane; White Salmon Fruit Growers' Union, White Salmon; Thurston County Fruit Growers' Union, Tumwater; Bay Island Fruit Growers' Association, Tacoma; Whatcom County Fruit Growers' Association, Curtis; Yakima Valley Fruit and Produce Growers' Association, Granger; Buckley Fruit Growers' Association, Buckley; Lewis River Fruit Growers' Union, Woodland; Yakima County Horticultural Union, North Yakima; Evergreen Fruit Growers' Association, R8, Spokane; Lake Chelan Fruit Growers' Association, Chelan; Zillah Fruit Growers' Association, Toppenish; Kiona Fruit Growers' Union, Kiona; Mason County Fruit Growers' Association, Shelton; Clarkston Fruit Growers' Association, Clarkston; Prosser Fruit Growers' Association, Prosser; Walla Walla Fruit and Vegetable Union, Walla Walla.

Idaho

Southern Idaho Fruit Shippers' Association, Boise; New Plymouth Fruit Growers' Association, New Plymouth; Payette Valley Apple Growers' Union, Payette; Parma Roswell Fruit

Growers' Association, Parma; Weiser Fruit and Produce Growers' Association, Weiser; Council Valley Fruit Growers' Association, Council; Nampa Fruit Growers' Association, Nampa; Lewiston Orchards Producers' Association, Lewiston.

Colorado

San Juan Fruit and Produce Growers' Association, Durango; Fremont County Fruit Growers' Association, Canon City; Rocky Ford Melon Growers' Association, Rocky Ford; Plateau and Debeque Fruit, Honey and Produce Association, Debeque; The Producers' Association, Debeque; Surface Creek Fruit Growers' Association, Austin; Longmont Produce Exchange, Longmont; Manzanola Fruit Association, Manzanola; Delta County Fruit Growers' Association, Delta; Boulder County Fruit Growers' Association, Boulder; Fort Collins Beet Growers' Association, Fort Collins; La Junta Melon and Produce Company, La Junta; Rifle Fruit and Produce Association, Rifle; North Fork Fruit Growers' Association, Paonia; Fruita Fruit and Produce Association, Fruita; Grand Junction Fruit Growers' Association, Clifton, Palisade, Grand Junction; Palisade Fruit Growers' Association, Palisade; Peach Growers' Association, Palisade; Colorado Fruit and Commercial Company, Grand Junction; Montrose Fruit and Produce Association, Montrose; Hotchkiss Fruit Growers' Association, Hotchkiss; Paonia Fruit Exchange, Paonia; Colorado Fruit Growers' Association, Delta.

Montana

Bitter Root Fruit Growers' Association, Hamilton.

Utah

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SOME OF THE PRESS OPINIONS OF BETTER FRUIT

E. H. Shepard, editor and publisher of "Better Fruit," was the principal speaker of the evening session of the school. He took for his subject "Better Fruit," and there is probably not another man in the country better capable of talking on this topic than Mr. Shepard. The speaker lives in Hood River, and went into the subject of fruit cultivation thoroughly.—Walla Walla Union.

The January number of "Better Fruit" was read with great interest in Rogue River Valley. It is devoted to the National Apple Show at Spokane, and of course the competition from this valley is well represented in photos and write-ups.—Ashland Record.

Discussing the benefits of the Second National Apple Show in Spokane last November, E. H. Shepard, a recognized expert and publisher of "Better Fruit," which devotes more than forty of the eighty-four pages in its January issue to text matter and illustrations descriptive of the exposition, says in the leading editorial that Spokane is the logical home of the enterprise.—Spokane Spokesman-Review.

"Better Fruit"—This is a special publication for the use of American fruit growers. The get-up is distinctly superior to similar journals produced on this side; it is well illustrated and smartly written. The conditions, of course, vary in almost every way from those in our own country; but still there are features of the business, more especially in packing, grading, etc., which are common to all climates, and we have no doubt that commercial fruit growers here would find much to interest them. The editor is Mr. E. H. Shepard, Better Fruit Publishing Company, Hood River, Oregon, U. S. A.—Horticultural Advertiser, England.

"Better Fruit," published at Hood River, is one of the ablest of the horticultural publications. A recent issue contains illustrations and descriptive matter regarding the Pope apple display at Spokane, as well as the box exhibits at the same show, methods of fruit exploitation that were recently financed under the auspices of the Commercial Club.—Ashland Tidings.

We have before us the February number, "Special Spraying Edition," of "Better Fruit," a magazine published at Hood River and devoted to fruit raising in all its branches, a magazine that should be in the home of every fruit grower. We can furnish you with this magazine in connection with the Herald for \$1.50 a year.—Grand View Herald.

Probably the most vital point that was brought out in the invaluable Farmers' Institute just closed was the importance of united action among producers, as outlined too briefly by E. H. Shepard, editor of "Better Fruit," the great horticultural paper published at Hood River, Oregon, and who is also president of the Hood River Apple Growers' Union. The necessity of such an organization will soon be felt in Kittitas Valley, and Mr. Shepard's remarks better prepare us for taking up the important work.—Ellensburg Capital.

"Better Fruit" for November contains 104 pages of information, illustration and advertising, and deals almost entirely in its subject matter with Washington, Oregon and Idaho and particularly with the horticultural activities of those states. It is an Irrigation Edition and as such is practically qualified to become a text book. The subject is treated from a variety of standpoints, all intensely practical in their method of handling and all profusely explained by the numerous illustrations. References, particularly in the pictures, to the Yakima Valley are numerous. Among the

topics discussed in the magazine are: "Measurement of Water by Means of a Meter," "Government Reclamation Projects," "The Reclamation of the American Desert," "Oregon's Law Controlling Water Resources," "Irrigation Situation in State of Washington," "The Duty of Water—Its Economical Handling," "The Horticultural Possibilities of Idaho," "Pumping of Water for Irrigating Purposes," "The Call of the West," which is from the pen of the late Governor Johnson of Minnesota, and "The Prune Growing Industry in Idaho."

It is, however, by "Better Fruit" itself that the best tribute is paid to the horticultural possibilities of the Northwest. A fruit growing community which has developed to such proportions that it can own and maintain such a publication as that in question indicates by the magazine itself the very prosperity and potentialities that it attempts to preach. Mechanically and otherwise the publication is apparently perfect—and it is home made. A section that can claim such a high class magazine devoted to a special interest need make no further claims in behalf of that special interest.—Portland Oregonian.

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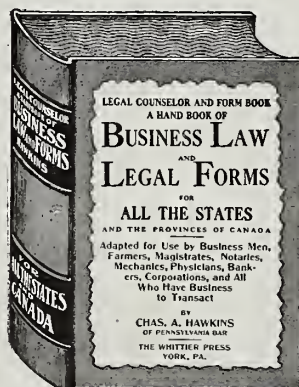
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| | Hexagonal | Square |
|-------------------------------|-----------|--------|
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| Raspberries and Blackberries— | | |
| 3 x 5 feet apart..... | | 2,904 |
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| Strawberries, Field Culture— | | |
| 1 x 3 feet apart..... | | 14,520 |
| Strawberries, Garden Culture— | | |
| 1 x 1 feet apart..... | | 43,560 |
| 2 x 2 feet apart..... | | 10,890 |

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BY JOEL SHOMAKER, GERMAN KALI WORKS, NEW YORK

BERRY growing has become one of the profitable industries of the small farm. In some sections of the West the berry fields return a greater annual profit per acre than can be obtained from any other crop. This is true in the Puyallup Valley, of Western Washington. That district is made up of little tracts planted to berries, asparagus, rhubarb and garden products. A combination of raspberries, blackberries and poultry insures good cash returns every month in the year. In a district that formerly depended on hops and potatoes and secured only a small measure of success, the berry industry has brought financial independence.

A few years ago the Puyallup Valley land was offered for \$40 an acre, with few buyers, while today it is sought by many buyers who are willing to pay \$400 to \$800 an acre. The growing and marketing of red raspberries and black blackberries has brought about the change in values. Where once the people did not know just how to raise money to meet their annual tax obligations, now there are scores of owners of city lots holding fair bank accounts, with balances on the right side of the ledger. Many of the berry growers have less than two acres, and the average of probably 600 berry fields does not reach one acre for each grower.

About ten years ago the berry growers formed an organization for shipping their products direct from producer to consumer. They elected a board of directors, giving that body full power to handle the volume of business. A manager was engaged and the best markets sought. One agent, or dealer, was selected in each of the Middle Western cities, such as St. Paul, Minneapolis, Grand Forks, Billings, Helena and Butte and the shipments consigned to him, after signed orders had been obtained from retail grocers. The berries were sent out in specially constructed refrigerator cars and billed direct to the dealers, with the understanding that remittances should be made within one week. The business of that local association has increased so rapidly that during the past season shipments of ten carloads of raspberries have been recorded in twenty-four hours. To meet the demand of the markets and insure something to sell throughout the season, the growers have the Cuthbert and Antwerp raspberries, for first crop, and following them, the Snyder, Kittatiny and Lawton blackberries, and the fall shipments are made from the Evergreen, the berry that has made Puyallup Valley famous in the fruit markets of the world. Fresh Evergreen berries are landed in refrigerator cars in Chicago, after crossing the intermountain continent between Western Washington and that big commercial city of the lakes.

No surplus berries are left to accumulate on the vines or in the packing

Cupid Flour

Has same standing in the Flour trade that Hood River Apples have in the Fruit trade.

MADE BY

HOOD RIVER
MILLING CO.LAYRITZ
NURSERY

Victoria, British Columbia

Headquarters for

CHOICE NURSERY STOCK

in British Columbia

Cox Orange Pippin

The fancy dessert apple of the very highest quality
our specialty

GET CATALOG AND PRICE LIST

A REPUTATION TO SUSTAIN

VINELAND
NURSERIES
COMPANY

PROPAGATORS OF

RELIABLE NURSERY
STOCKAll stock budded from bearing
Trees, Fruit and Ornamental

CLARKSTON, WASHINGTON

SPRING SHIPMENTS
NOW ON

But we are already planning the biggest selling campaign in our history for fall 1910 and spring 1911.

We told you in our last ad of our enormous planting for next season's selling.

Those figures are almost beyond believing, but they are all true. A year or two ago they would have almost "paralyzed" us, for we would not have known when we would dispose of the stock.

It's different now. Our stock has proven itself in so many localities and has "made good" in the hands of so many thousands of customers that we have difficulty in growing enough stock.

This year we've planned to meet the demand. If five million apples, two hundred and seventy thousand pears, one hundred and fifty thousand cherries, and a million four hundred thousand peach, plum, prune and apricot will help any, we will be ready. That's our plant for 1910, besides seedlings, seeds, etc.

Watch for our salesman, send for our catalogue, and write us your wants.

Washington
Nursery
Company

TOPPENISH, WASHINGTON

Agents Everywhere

More Wanted

PORTLAND WHOLESALE
NURSERY COMPANYRooms 1 and 2 Lambert-Sargeant Building
Corner East Alder Street and Grand Avenue
PORTLAND, OREGON

NURSERY SALESMEN

Drop us a line for information regarding
our splendid proposition.

Big commissions paid weekly.

OUTFIT FREE

SALEM NURSERY COMPANY
SALEM, OREGON

TREES

Large supply of all commercial standards, on whole roots. Planters should get in touch with us for fall plantings. Agents wanted.

CARLTON NURSERY CO.

Carlton, Oregon

420 Acres Devoted to Nursery Purposes

THE WOODBURN
NURSERIES

Established 1863 by J. H. Settlemier

Grower of Choice
Nursery Stock

F. W. SETTLEMIER

Woodburn, Oregon

THE NEW WEST

Is full of surprises. It is no longer the land of cowboys, coyotes, blanket Indians. Instead of illimitable sagebrush desert, one finds fruit laden orchards, heavy headed grain, green meadows and alfalfa fields. It's the best of God's out-of-doors country—clear skies, pure air, snow clad mountains, waterfalls, odorous pine woods. Read all about it in The Pacific Monthly, magazine of the West.

The Pacific Monthly Company,
Portland, Oregon.

I am interested in the New West. Send three recent numbers of your magazine, for which I enclose 25 cents.

Name_____

BF Address_____

houses. If too many arrive in one day to fill orders, the ripest lots are sent to the cannery. That is maintained by the berry association for the purpose of utilizing everything picked from the vines and trees. A rain does no harm during the berry season, although the fruits may be soft and too ripe to ship, for every box is taken to the cannery and fair prices realized. To make the cannery a paying proposition and keep the machinery in motion, all sorts of fruits are used, and the country for many miles around is worked over to get cherries, apricots, peaches, pears, apples and all other marketable fruits and vegetables for canning purposes.

Two years ago the Puyallup berry growers decided to experiment on the use of potash in producing profitable crops. They ordered a shipment of 60,000 pounds of sulphate of potash. That came direct from Germany and was distributed among the berry growers. It was sown broadcast at the rate of 200 pounds per acre, between the well-cultivated rows of raspberry and blackberry bushes, and developments watched with interest. The results at harvest times were surprising to even the most skeptical man on the subject of fertilizers. The crops, where potash was used, increased in yield an average of one-third, the fruits were larger, better colored and more firm and could be shipped to a greater distance than the ordinary berries grown without the use of potash.

Berry growers visited the fields of Puyallup Valley for many miles around, in order to see the effects of a proper

use of potash. Mr. W. H. Paulhamus, president of the Puyallup and Sumner Fruit Growers' Association, says that "One could sit upon a fence and see the exact line marking the place where potash was supplied and where no fertilizers were used. The results were shown in the rank growth of the canes and leaves, the brilliant blossoms, the large and well colored fruit, and the carrying strength of the berries. They were in much better condition for long distance shipments to the cities of the Middle West.

There seems to be no limitation to the market for small fruit. If an immediate sale of ripe fruits cannot be effected the cannery solves the problem of how to convert them into cash. The canneries owned by the Puyallup Valley

The Shenandoah Nurseries

*Offer for Fall and Winter Trade
a Complete Assortment of*

IMPORTED FRUIT TREE STOCKS

Mahaleb, Mazzard, Myrobolan and Pear

APPLE SEEDLINGS

American and French Grown. All Grades. Straight or Branched

APPLE GRAFTS

Piece and Whole Root

FINE STOCK OF GRAPES, CURRANTS AND GOOSEBERRIES

Strong, Well Rooted Plants

FOREST TREE SEEDLINGS

Carefully Grown and Graded

LARGE GENERAL STOCK

Send List for Prices

D. S. LAKE, Proprietor

Shenandoah, Iowa

Hemingway's

ARSENATE OF LEAD

A Perfect Product
Properly Packed
Honestly Priced

*Guaranteed to meet
the requirements of the various
State Agricultural Authorities*

For Coast Prices and Supplies
Address the Agents

KERR, GIFFORD & CO.
Portland, Oregon

Hood River Nurseries

Have for the coming season a very complete line of

NURSERY STOCK

Newtown and Spitzenberg propagated from selected bearing trees. Make no mistake, but start your orchard right. Plant generation trees. Hood River (Clark Seedling) strawberry plants in quantities to suit. **Send for prices.**

RAWSON & STANTON, Hood River, Oregon

"THE OLD RELIABLE"

Albany Nurseries

Incorporated

ALBANY, OREGON

LARGE STOCK, FIRST-CLASS TREES

Place Your Orders Now
CATALOGUE FREE

MORE SALESMEN WANTED

Seeds

THE KIND YOU CAN'T KEEP IN THE GROUND

They grow, and are true to name.

Write for prices on your wants.

188 Front Street **J. J. BUTZER** Portland, Oregon

Poultry Supplies, Spray, Spray Materials, Fruit Trees, Etc.

The Sunnyside Nursery Company

Incorporated

Capital Stock \$100,000

Main Office at Sunnyside, Washington

RETAIL AND WHOLESALE NURSERY

Advertising Has Paid

By using the best horticultural magazines where we are able to place before the public the fact that we are growers of the best of stock, and follow this up by shipping first-class stock only, the quality of which has spread the glad tidings to the many buyers of high grade stock.

By combining advertising, quality of stock, and good square dealing we have advanced our nursery from a local plant to a great commercial plant of millions of trees in standard varieties.

Our sales at this time foot up into hundreds of thousands. Of Jonathan and Rome Beauty we will have half a million of each, and other stock in proportion. Our trees are well matured, large, and, best of all, well rooted.

We won the gold medal at the A.-Y.-P. Exposition for the best stock, and bought the right for the sale of the Goodell strawberry, also a winner of a gold medal, which we will place on the market in the fall of 1910. It has no equal for fragrance, sweetness, color and quality, and is bound to take the lead of all other berries.

Mention this paper when you write.

farmers have a national reputation. Their fruits have been tested on the leading markets of the United States

For Northwest Fruit Growers in General

A FULL STOCK OF

**Spitzenberg
Jonathan, Winesaps
Rome Beauties
Etc.**

31 YEARS IN BUSINESS

Milton Nursery Company

A MILLER & SONS, Incorporators
MILTON, OREGON

and pronounced first-class. They secure the highest prices and always have orders on file for the output of the year. Where the soil, climate and transportation facilities are adapted to the business of intensive farming, there is nothing more inviting to a community of small land holders than the combination of berry and poultry growing, provided the people will organize and adopt the best methods of producing and marketing that which the buying public demands.

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BBETTER FRUIT DEMANDS BETTER ROADS—"Better Fruit" demands better roads, because hauling fruit over rough roads damages the fruit. Better roads mean a better community; a better community means better schools; better schools mean better men and women; better men and women mean better morals and better lives.

LETS GET TOGETHER

And reason this thing out.

You want the best that money can buy when you set out your orchard.

You want trees that will grow; hardy, well-rooted trees, free from disease and perfectly matured.

You want to buy from a reliable concern that makes good its promises and gives everybody a square deal.

You can't afford to take chances when setting out your orchard. You have too much at stake. Insist on getting thoroughly matured, well-rooted stock, so you will lose no time in picking your first crop. By buying poor stock and losing one year's growth (always the case when buying inferior stock) you may miss the year when fruit would be high priced. Can you afford to do so for the slight difference in price it takes to get good, reliable stock?

We are located in the heart of the famous Yakima Valley, where the richness of the soil and the climatic conditions are ideal for the raising of nursery stock. Our stock is clean, well rooted and healthy; our work is so systematized in the office and packing shed that the minimum of mistakes occur, and it is our endeavor to treat all customers with the utmost courtesy.

No matter whether you are a large or small planter, you should write us before placing your order. It will be to your advantage to do so. Write us today and let us prove it.

**YAKIMA VALLEY
NURSERY COMPANY**

Toppenish, Washington

Write for catalog

More agents wanted

RESOURCES AND OPPORTUNITIES

There is more doing in the West today in the way of progress and development than in any other section of the United States. If you are interested and want further information about opportunities and resources of a vast new empire, use the coupon.

The Pacific Monthly Company,
Portland, Oregon.

Find enclosed 25 cents, for which please send me three recent numbers containing articles about resources and opportunities in the West.

Name.....

BF Address.....

THROUGH THE SOUTH SEAS WITH JACK LONDON

Jack London saw many strange sights in his year's cruise on the "Snark." Not all of us will have the opportunity of making such a voyage, but we can enjoy the enchantment and novelty of such a trip through the descriptions of such an artist as London. The series of travel sketches is running now. Send the coupon and get started right.

The Pacific Monthly Company,
Portland, Oregon.

Enclosed is 25 cents. Send three recent issues containing Jack London's South Sea articles.

Name.....

BF Address.....

SURPLUS TREES

50,000 Peach

4,000 Comice Pear

10,000 Winter Nellis Pear

WAPATO NURSERY

TIM KELLY, Proprietor

WAPATO, WASHINGTON

BROWN GALL of blackberries is a disease which merits the attention of blackberry growers in all parts of the state. The disease is caused by a bacterium. The warts begin to form on the canes by the middle of May, and continue to grow throughout the greater portion of the growing season. Growth is especially rapid just before to a little after flowering of the plants. The injury done varies with the position of the warts. Those near the center of the stem cause the stem to split open, and not infrequently canes are split the greater part of their length. Warts that appear in the "crotches" of the branches frequently girdle them, and the pressure exerted may cause the lateral to split in the angle of the branch. Most generally

the fruit of infested plants matures fairly well in size, but is dry and tasteless and of little value as food. The only remedy is to remove all infested canes soon after the fruit has been gathered and burn them. The parasite that causes the trouble is in the warts, and if the latter are permitted to remain in the field they will decay and set the organisms free, thus aiding in the spread of the disease. Practice clean culture.—W. H. Lawrence in Spokane Spokesman-Review.

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SEVENTEEN LESSONS IN BETTER FARMING.—Every reader of "Better Fruit" is entitled to receive, free of all cost, a copy of a remarkable book, published by Deere & Company. The title of this book is "Better Farming," and it tells just what every progressive farmer wants to know. It contains separate chapters on Alfalfa Growing, Business-like Dairying, Silos and Silage, Improv-

Burpee's Seeds that Grow

140 VARIETIES ANY QUANTITY

Plenty of stock in our 40,000 pounds

Growing Plants as season requires

All makes high grade

Pruning Tools

Garden Tools

Hose and Spray Nozzles

International Stock and

Poultry Food

International Remedies

Incubators and Brooders

Everything for Building

Everything for Furnishing

Stewart Hardware & Furniture Co.

22,000 feet floor space Hood River, Oregon

Where Can I Get the Best Trees?

You've asked yourself and neighbors this question scores of times. We dare not tell you—you'd simply smile and say, YES?

But our customers can tell you, and if you want to know who made any of the following statements, we'll gladly tell you. These statements are unprejudiced, perfectly reliable—read them.

"Never saw better trees."

"I want to say, the fifteen hundred (1500) trees purchased of you are the finest in the valley."

"I never saw a finer orchard in my life, and every tree in it has been furnished by the Oregon Nursery Company, Orenco, Oregon."

"Have lost only five (5) trees out of the eight hundred fifty (850) trees planted. That's Orenco trees for you."

"Wish you could see my orchard of over two thousand trees (2000), all from the Oregon Nursery Company. They can't be beat."

"Did not lose a tree out of the five hundred and twenty-five (525) you furnished me."

"We are very proud of our orchard—over five hundred trees (500)—all from the Oregon Nursery Company. They have made the most wonderful growth I've ever seen or heard of."

These people have told you better than we could the kind of trees we grow, sell and deliver. We can furnish you anything you want in the way of FRUIT TREES, SHADE AND ORNAMENTAL TREES, SHRUBBERY, ROSES. Large or small lots makes no odds. Our salesman will be around to see you; should he miss you, drop us a line direct.

ADDRESS

OREGON NURSERY COMPANY

SALESMEN WANTED

ORENCO, OREGON

A Trip to the Coast

Is incomplete without a ride
on the

Mt. Hood Railroad

By mountain streams, virgin for-
ests, apple orchards and snow
capped peaks

Connects with O. R. & N.
at Hood River, Oregon

CAPITAL STOCK \$100,000 SURPLUS \$20,000

FIRST NATIONAL BANK

HOOD RIVER, OREGON

F. S. STANLEY, *President*
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ESPECIAL ATTENTION AND CARE
GIVEN TO BUSINESS DEALS
FOR NON-RESIDENT CUSTOMERS

Assets over \$500,000

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Send us your
White Salmon Valley Business

White Salmon Valley Bank

Under state examination

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ing the Corn Crop, Hints on Making Hay, Seed Wheat, Soil Cultivation, Maintaining Fertility, Improving the Cotton Crop, The Gasoline Engine, The Boll Weevil, The Science and Art of Plowing, Fighting Jack Frost, and Adjustable Wheel Plows. Each chapter is prepared by an authority who knew how to make every sentence count. Each chapter goes right to the heart of its subject and is of vital importance not only to our readers, but also to every other progressive farmer in the country. In addition to these directly instructive articles, there is an inspiring introduction to the book under the general head of "Better Farming," an intensely interesting chapter on the invention and development of the steel plow; and on other pages, the complete line of Deere plows and cultivators are well illustrated and described. All in all, we don't remember to have seen another book published for free distribution that will be so much appreciated. During the past seventy years Deere & Company have gotten mighty close to all farmers of America. They have done some fine things in the way of issuing free books of value. But they have capped the climax with this latest book. Certainly, some four or five or perhaps mostly all of the lessons in this book will be of particular value and interest in every farm home we reach. Hence, we trust that thousands will take advantage of this opportunity. Just mail a postal or letter to Deere & Company, Box 47, Moline, Illinois, and ask for a copy of "Better Farming," second edition, giving your name and complete address, and stating that you are a reader of this paper. It will pay you to write the postal now, for the things it tells may help you in your next week's work. The book is certainly a mine of valuable information and should be handy for every farmer to read thoroughly. Send the postal now.

TAKE advantage of all that nature produces. Check the ravages of disease and insects by proper spraying. It does not pay to work hard in producing big crops and then lose a percentage on account of lack of proper care. The immense value of spraying is known. Crops of potatoes and fruits have been doubled by it. It has enabled thousands of progressive farmers to make orchards and fields pay big—where formerly they paid little or were losing investments. The most careful cultivation and the most careful selection of seed avail nothing if you let disease and insects get the better of your crops. Check them—and your bank account will show a much bigger balance at the end of the season. You must spray—and it must be properly done. So be careful in the choice of a spraying outfit. Look at the record of the outfit you are thinking of buying. Look to the reputation of the maker. Consider from every possible point of view. Then you are safe in deciding. The spraying outfits that have caused considerable favorable comment among practical farmers and fruit growers are in the I. H. C. Famous line. The I. H. C. points of advantage appeal to men with both eyes on the dollar mark. For, besides their wonderfully efficient spraying qualities, the engine can easily be detached and used for regular farm work, such as running the grinder, cream

J. M. Schmeltzer, *Secretary*

Hood River Abstract Company
Hood River, Oregon
ABSTRACTS INSURANCE
CONVEYANCING

LADD & TILTON BANK

Established 1859

Oldest bank on the Pacific Coast

PORTLAND, OREGON

Capital fully paid **\$1,000,000**
Surplus and undivided profits **\$600,000**

Officers:
W. M. Ladd, *President*
Edward Cookingham, *Vice President*
W. H. Dunckley, *Cashier*
R. S. Howard, Jr., *Assistant Cashier*
J. W. Ladd, *Assistant Cashier*
Walter M. Cook, *Assistant Cashier*

INTEREST PAID ON TIME DEPOSITS AND SAVINGS ACCOUNTS

Accounts of banks, firms, corporations and individuals solicited. Travelers' checks for sale, and drafts issued available in all countries of Europe.

LESLIE BUTLER, *President*
F. McKERCHER, *Vice President*
TRUMAN BUTLER, *Cashier*

Established 1900
Incorporated 1905

Butler Banking Company

HOOD RIVER, OREGON

Capital Fully Paid, \$50,000 Surplus and Profits are \$30,000

INTEREST PAID ON TIME DEPOSITS

We Give Special Attention to Good Farm Loans

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY

NEW RESIDENTS

We are always pleased to extend courteous assistance to new residents of Hood River and the Hood River Valley by advising them regarding any local conditions within our knowledge, and we afford every convenience for the transaction of their financial matters. New accounts are respectfully and cordially invited, and we guarantee satisfaction. Savings department in connection.

HOOD RIVER BANKING AND TRUST COMPANY
HOOD RIVER, OREGON

separator, churn, pump, thresher, huller, cutter, grindstone, fanning mill, etc. This feature alone has induced thousands of farmers to decide on an I. H. C. spraying outfit for they have "killed two birds with one stone." The reliability, economy, durability, simplicity, strength, efficiency and other advantages of I. H. C. engines are generally known, and needing both a spraying outfit or a gasoline engine, and not desiring to get two separate outfits, these farmers have solved the problem by purchasing one of the I. H. C. Famous Spraying Outfits. One of these outfits is a year 'round money-maker and you can choose just the size and style to suit you for orchard, field or vineyard work. Complete outfits—engine, pump and all accessories, mounted on skids or wagon trucks. Blue-prints are furnished so you can build your own spray-wagon tank, housing, etc. It might be well for you to see the local International agent the next time you are in town and ask him about the I. H. C. Famous line of spraying outfits. Let him help you decide on the one that meets your requirements best, or, if you prefer, drop a line direct to the International Harvester Company of America, Chicago, U. S. A., for catalogue and any definite information you desire. It's a good start to bigger crop cash, and we suggest "doing it now" while the matter is on your mind.

The PARIS FAIR

Hood River's largest and best store

DRY GOODS SHOES, CLOTHING

We are offering some extra specials in our Clothing Department. Ask to see them

Try a pair of American Lady \$3 and \$3.50 Shoes, or American Gentleman \$3.50 and \$4

THINGS WE ARE AGENTS FOR

KNOX HATS

ALFRED BENJAMIN & CO.'S
CLOTHING

DR. JAEGER UNDERWEAR

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UNDERWEAR

DENT'S and FOWNES' GLOVES

Buffum & Pendleton

311 Morrison St., Portland, Oregon

OLDEST LIVERY COMPANY
IN THE VALLEY

TRANSFER & LIVERY CO.

Special attention to commercial
men, camping & fishing parties

TELEPHONE MAIN 131

HOOD RIVER, OREGON

LEARN MUSIC IN YOUR HOME

Without a Teacher

By the wonderful Simplex copyrighted system any one of ordinary intelligence can quickly learn to play piano or organ. You need not know the first principles of music. By no other method can you learn music so quickly and thoroughly as by the Simplex system. There is nothing like it. The study is easy and fascinating. In just a few weeks by this method you can play the ordinary popular and classical music. By our system you can study during spare time in your home and quickly become a capable musician.

We have delighted students in every state and territory. Many of our students, after six or eight lessons, begin playing piano or organ in church and Sunday school. Others write that after one lesson they are able to play a waltz from memory. Another student says: "Everything is so simple, and a student learns so fast that he himself cannot realize it."

If you wish to become a skilled musician, write at once for our free book, "Learn Music in Your Home Without a Teacher." Address Simplex School of Music, Conservatory 456, Kansas City, Missouri.

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Almost the whole world knows of Hood River as a place that produces the best fruits, and all of Hood River Valley should know, and could know, that there is one place in Hood River, under the firm name of R. B. Bragg & Co., where the people can depend on getting most reliable dry goods, clothing, shoes and groceries at the most reasonable prices that are possible; try it.

S. E. Bartmess

UNDERTAKER AND
LICENSED EMBALMER

For Oregon and Washington

Furniture, Rugs, Carpets
and Building Material

Hood River, Oregon

AUTHENTIC INFORMATION

Railway men say the colonist movement westward in 1910 will be unprecedented. Thousands are harkening to the call and fortunes are being made now by the early arrivals. New railroads are opening up vast, almost limitless new territory. Let us tell you about it. Send 25 cents in stamps for information.

The Pacific Monthly Company,
Portland, Oregon.

Enclosed find 25 cents for three recent numbers containing articles relative to land conditions in the West.

Name_____

BF Address_____



When you get to Hood River
stop at the

MT. HOOD HOTEL

Trains stop directly in front
of hotel. Bus meets all boats

Automobile service daily for
Cloud Cap Inn during months
of July, August and September

All Fruit Growers



Make
Their Headquarters
at

The Portland

H. L. BOWERS, Manager

Portland, Oregon



Excursion Rates to the East

DURING 1910
FROM ALL POINTS ON

The Oregon Railroad & Navigation Company

| | |
|---------------------------------------------|---------|
| To Chicago | \$72.50 |
| To Council Bluffs | 60.00 |
| To Omaha | 60.00 |
| To Kansas City | 60.00 |
| To St. Joseph | 60.00 |
| To St. Paul | 60.00 |
| To St. Paul via Council Bluffs | 63.90 |
| To Minneapolis direct | 60.00 |
| To Minneapolis via Council Bluffs | 63.90 |
| To Duluth direct | 66.90 |
| To Duluth via Council Bluffs | 67.50 |
| To St. Louis | 67.50 |

Tickets will be on sale May 2 and 9, June 2, 17 and 24, July 5 and 22, August 3, September 8.

Ten days provided for the going trip. Stop-overs within limits in either direction. Final return limit three months from date of sale, but not later than October 31. One way through California, \$15.00 additional.

Inquire of any O. R. & N. Agent for more complete information, or

WM. McMURRAY

General Passenger Agent

Portland, Oregon

The Austin Drainage Excavator

The only machine that will dig a drainage or irrigation ditch to exact cross-section in one operation.

A guide frame templet, duplicating to full size the engineer's cross-section plans, controls the depth, width and shape of the cut made.



It digs a perfectly shaped ditch for the engineer.

It digs a ditch at low cost because it removes no surplus material and does away with trimming and finishing—a cheap ditch for the contractor.

OUR FULL LINE COMPRISES:

The Austin Levee Builder The Austin Drainage Excavator
The Austin Side Hill Ditcher The Austin Drag Line Excavator
The Austin Highway Ditcher The Austin Rolling Platform Traction
The Austin Tile Ditcher The Austin Orange Peel Ditcher
The Austin Stump Puller and Grubber

WE SELL OUTRIGHT OR LEASE

SEND FOR CATALOGUE "K"

F. C. Austin Drainage Excavator Co.

Railway Exchange, Chicago, Illinois

AGENTS WANTED IN UNOCCUPIED TERRITORY

IRRIGATION DITCHES

2¢ a Rod

Four to five miles a day, eighteen inches deep. You—alone—one man—four horses can cut them. Cost but \$1.25 to \$1.50 per mile with a

**20th Century
Grader**

an all-the-year-round irrigation machine. It's the irrigation farmer's best investment for a small sum. Many machines in one.

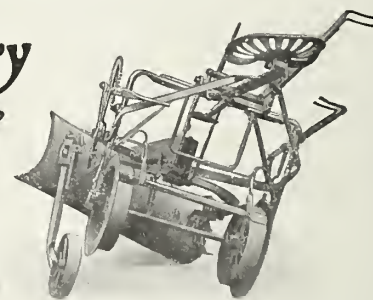
LOOK! You can grub, level land, ditch, throw checks or levees, make roads—move dirt as you choose with this one all-steel 600-pound machine.

MIGHTY FINE FOR CLEANING LATERALS

New, free catalog explains by big photos. Write now.

The Baker Manufacturing Company

742 FISHER BUILDING, CHICAGO



20th Century tilted to cut laterals

RICHES IN GROWING AND MARKETING RED APPLES

BY JOEL SHOMAKER

RED apples are in demand on all markets of the world. Select specimens from some of the Western states are worth more than the choicest citrus fruits. Colorado recently announced the sale of a box of prize-winning red

apples for \$52.50. That was considered the highest price since the famous Hood River beauties were received by the royal families of Europe and gave Oregon fame as an apple-producing section. Now comes the report that a box of

Winesaps containing 112 apples, grown in Wenatchee, Washington, has been sold in Chicago for \$67.50, being more than sixty cents each. They were blue ribbon fruits at the Spokane National Apple Show.

Apple growing has become one of the most profitable forms of modern orcharding. Irrigated lands, planted to good market varieties of red winter apples, sell readily for \$1,500 to \$2,500 an acre. Business men invest in orchards because they bring better returns on the money than other branches of financing. Many professional men leave their old haunts and engage in apple-growing for recreation and profit. The new life adds to their prospective years of usefulness on the earth and makes possible the maintaining of a bank account, with the balance on the right side of the ledger. There is romance in the apple orchard that carries the heroes to financial and physical success.

There are several varieties of good apples. Among the most favored ones are the Delicious, Rome Beauty, Winesap, Spitzenberg, Ben Davis, and other red specimens having the long-keeping qualities as records of value. Every class has its special merits and personal advocates. In some districts the Winesaps are outclassed by the Rome Beauties, and in other sections the Ben Davis and their close relations, the Ganos, are held in contempt. But the apple grower plants his orchard for the purpose of getting cash returns in as few years as possible, and the soil, climate and transportation must be considered in figuring on the probable annual income.

Apple trees should be planted about thirty feet apart either way, and the space between the rows should be kept in good condition while the young trees are making their preliminary growth before bearing time. That is necessary in order to furnish proper nourishment for the perfect development of the trees. Every year of growth takes up the natural elements of fertility in nitrogen, potash and phosphoric acid, and a new supply must be given the soil to prevent immature wood formation, resulting in inferior fruits and ultimate loss on the investment. Such plant foods may be obtained by growing leguminous plants and the application of fertilizers during the process of cultivation for tree growth.

Many Western apple growers have discovered the value of proper food for

VEHICLES AND AGRICULTURAL IMPLEMENTS

THE BEST OF
ORCHARD AND GARDEN TOOLS
A SPECIALTY

**GILBERT - VAUGHAN
IMPLEMENT CO.**
HOOD RIVER, OREGON

D. McDONALD

Hood River, Oregon

Headquarters for
FARMING AND ORCHARD

TOOLS

Disc Harrow Extension for
Orchard Cultivation a Specialty

When you want any kind of Orchard
Tools come to me and get the Best



COLUMBIA RAMS

Make Arid Land Valuable

Cost about \$15.00 per acre of land
irrigated

COLUMBIA RAM CO.

Tenth and Johnson Streets

Portland, Oregon



The importance of thoroughly cooling and aerating fresh milk and cream is so well known among up-to-date dairymen that it hardly seems worth while to mention the matter here. If you have any doubts about same, write for information and descriptive matter of our coolers. Prices vary from \$2.25 up, depending on size and quality.

Please remember that we make a specialty of machinery and supplies for the dairy, creamery and cheese factory. If not convenient to call on us, write a postal card today for circular matter and catalogues of anything in our line in which you are interested.

MONROE & CRISSELL

145 FRONT STREET PORTLAND, OREGON



THE MIRACLE OF WATER

Millions of acres of raw land are being reclaimed in the West by irrigation. Water makes this desert waste the most fruitful land in the world. No magician has wrought such wonders with magic wand. Interested? Send the coupon.

The Pacific Monthly Company,
Portland, Oregon.

Enclosed find 25 cents, for which please send me three recent numbers telling about the Miracle of Water.

Name.....

BF Address.....

FINE BABY CHICKS EIGHT CENTS EACH

Leghorns, Wyandottes, R. I. Reds, Minorcas, Langshans, Orpingtons, Plymouth Rocks, etc. All fine stock. Partly grown chicks, 30 cents each. Eggs for hatching, \$4.00 per 100. We guarantee safe arrival anywhere. Booklet free.

CULVER POULTRY FARM

121 Broadway Benson, Nebraska, U. S. A.

And Remember This—

PEARSON

Cement Coated Wire Nails

Are used by nearly every fruit packer on the Pacific Coast. If you do not use them, your boxes are not up to the highest standard. There is no other nail "just as good." Twenty years' experience in the manufacture of fruit box nails has resulted in a perfect product. Just what you need for your fruit boxes.

Order the PEARSON brand from your hardware dealer and accept no substitute. PEARSON nails cost no more than the common kind and give better results.

Send for our new booklet—free

J. C. PEARSON CO.

Boston, Massachusetts

Sole Manufacturers

A. C. RULOFSON CO.

Monadnock Bldg., San Francisco, California

Pacific Coast Sales Agents

PHEASANT EGGS
FOR HATCHING
PURE BRED CHINAS
ROCK SPUR PHEASANT FARM
Office 607 BLAKE, McFALL BUILDING (Phone Main 1836)
Fourth and Ankeny Streets PORTLAND, OREGON

Land Plaster, the Great Soil Stimulator

Strengthens and invigorates all soils. You cannot afford to be without it

OREGON LIME & PLASTER COMPANY

Mill: Lime, Baker County, Oregon. Office: Worcester Bldg., Portland, Oregon



**RHODES DOUBLE CUT
PRUNING SHEAR**

Pat'd June 2, 1903.

RHODES

RHODES MFG. CO.,
GRAND RAPIDS, MICH.

THE only
pruner
made that cuts
from both sides of
the limb and does not
bruise the bark. Made in
all styles and sizes. We
pay Express charges
on all orders.
Write for
circular and
prices.

young trees and those in bearing. In districts bordering on the Pacific Coast color was lacking in the fruits and the growth did not insure uniform specimens for packing. The growers were advised to try potash fertilizers as a remedy for the noticeable impediments to successful orcharding. A top dressing of a complete fertilizer, containing nitrogen, 2 per cent, potash 12 per cent, and phosphoric acid 8 per cent, gave desirable results. In one instance, in the Puyallup Valley of Western Washington, the application of potash in connection with nitrogen and phosphoric acid increased the yield of fruit, intensified the color and added to the keeping qualities, giving an income of approximately one-third more than from former years of apple growing.

There is no danger of an over-supply in the apple markets of the world. Consumers are calling loudly for more fruits and they have the money to pay whatever prices the fruit growers may demand. With more attention to the selection of varieties, planting and cultivation of young orchards and the spraying and fertilization of bearing trees, success is certain, provided the methods of transportation are not too expensive. There is a limit to the distance apples may be hauled for competitive marketing. Every specimen must be packed in such a condition that when opened and placed on sale it will be without spot or blemish. Perfection can be attained through a close application to the study of nature and her needs in holding the necessary amount of plant food for complete development of quality and quantity of fruits demanded by the careful buyers of the day.

SIXTY-FOUR MILLION ACRES FOR POOR. Louis W. Hill, president of the Great Northern Railway, in a spirit of humor last night sent a telegram to George T. Jackson of St. Louis, who is working on the enterprise of providing free lands to be settled by the poor, announcing that 64,000,000 acres of free government land lie in the Northwest territory tributary to St. Paul, ready for any people who will settle and develop them. Mr. Jackson has announced that he will give 4,000 acres of Arkansas farm land to the unemployed of St. Louis and vicinity. Since making his announcement he has received nearly 1,000 letters from other wealthy philanthropists offering in all about 50,000 acres from Manitoba to Texas for this enterprise. This land is to be divided into small farms to be worked on the community plan. The enterprise is being conducted by the St. Louis Welfare Association.



Are standard—the best to be had for money-making purposes. We are Agents for Lewis Bee Ware. Send for Catalog. Most authoritative Bee Book issued, 84 pages of definite information. Illustrated.

The Chas. H. Lilly Co. Seattle.

C. M. SHAW

ROY F. DEAN

Dean & Shaw

Electrical Supplies and Fixtures
Scientific Electrical Construction

Home Phone 3 Hood River, Oregon

WONDER OIL LAMP

Sent To Your Home

We want you to try in your own home, without risk or expense, our marvelous new, 100 candle power Wonder Oil Lamp, generates its own gas from common coal oil—burns on incandescent mantle. Six times cheaper than old style lamp and far more brilliant than electricity or gas. 40,000 families now using. The price of this lamp is \$6.00, but to introduce it quickly, we will make one person in each locality a **Special Free Offer**. Remember, if you send the Wonder Lamp, express prepaid. We want to place one for demonstration purposes in your home and ask that you recommend it to your neighbors. Let the Wonder Lamp light your home. Simply send your name and address today.

United Factories Co., Dept. 1 Kansas City, Mo.

Marlin

.25-20



Model 1894

Repeating Rifle

This rifle is built for settled districts, where good range and killing power are desired, with safety to the neighborhood.

The Marlin .25-20 is a light, quick-handling, finely-balanced repeater, with the solid top, closed-in breech and side ejection features which make Marlin guns safe and agreeable to use and certain in action.

It is made to use the powerful new high velocity smokeless loads with jacketed bullets as well as the well-known black powder and low pressure smokeless cartridges, and is the ideal rifle for target work, for woodchucks, geese, hawks, foxes, etc., up to 300 yards.

This rifle and ammunition, and all other Marlin repeaters, are fully described in our 136-page catalog. Free for 3 stamps postage.



The Marlin Firearms Co.,
Willow Street, NEW HAVEN, CONN

SCOTT-MUNSELL IMPLEMENT CO.

321-329 East Morrison Street, Portland, Oregon

1018-1020 Sprague Avenue, Spokane, Washington

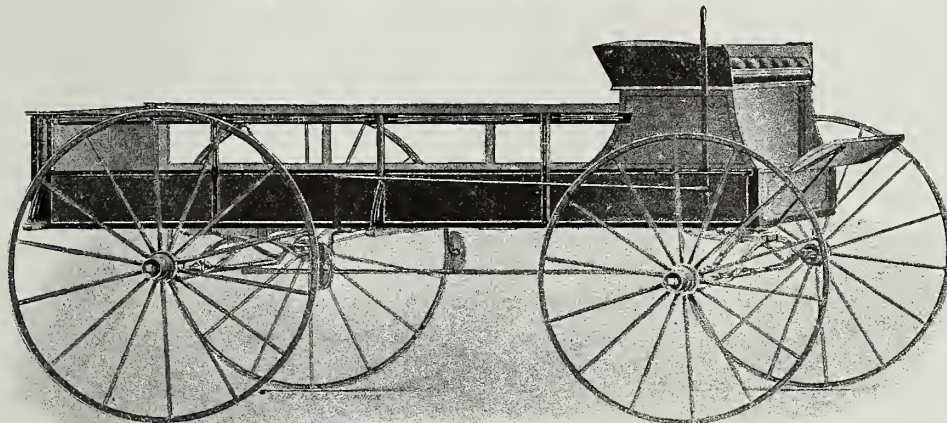
WHOLESALE AND RETAIL DEALERS IN

Vehicles and Implements

Carry large assortment of best styles of earth-working tools; also haying and harvesting machinery; also wagons for fruit delivery and for teaming; also driving vehicles for business and for pleasure uses.

WE RECOMMEND TO FRUIT GROWERS THIS WAGON NO. 120
MADE BY FREMONT CARRIAGE MANUFACTURING COMPANY

Bodies
42 inches
wide.
Have drop
end gate
with chains.
Hang low
on duplex
springs.



Uses the
celebrated
"Fitch Gear"
"Short Turn"
with
high wheels,
wide body
hung low.

Sizes: 1 1/8-inch, 1 1/4-inch, 1 3/8-inch and 1 1/2-inch axles. Bodies: 7-foot, 8-foot, 9-foot, 10-foot; 42 inches wide

THE NAME OF MAKERS IS GUARANTEE OF HIGHEST QUALITY

Stanley-Smith Lumber Co.

WHOLESALE AND RETAIL

LUMBER

Lath, Shingles, Wood, Etc.

HOOD RIVER, OREGON

organized by James Eads Howe. Mr. Hill's telegram to Mr. Jackson reads as follows: "We have always been interested in getting people upon farms. We are much interested in the newspaper report that you have been able to find 50,000 acres of free land available for this purpose extending from Manitoba to Texas. We have for many years been locating persons on the free government lands of the West and herewith submit you 64,000,000 acres of free government land available for your purpose. For tables as to counties and classification, see government report, Department of the Interior, on the unappropriated lands of the United States, last issue, showing Minnesota, one and one-half million acres; Montana, forty million; North Dakota, one and one-half million; Oregon, eighteen million; Washington state, three million."—St. Paul Pioneer Press, April 19.



Great Northern Railway Co.

St. Paul, Minnesota, April 23, 1910.

Editor Better Fruit:

The Oregon Trunk Railway is now building its lines down the Des Chutes Canyon into Central Oregon. When it reaches Bend, it will have tapped a region of more than twenty million acres of timber, farming and grazing lands that has hitherto been without railway facilities. I take pleasure in sending you, under separate cover, a copy of the Great Northern Railway's first publication exploiting the opportunities for the home-seeker and investor in this region, a pamphlet entitled "Opening Up Central Oregon." This is our opening gun in a campaign of publicity which we trust will within a short time populate the millions of acres of broad prairie land lying in Wasco, Crook, Lake and Klamath Counties with the same virile and thinking type of farmer that is now transforming the prairies of Montana into farms of tremendous agricultural wealth producing power. About 50,000 copies of this pamphlet have already been circulated. An additional edition of 25,000 will be received from the printer this week. The Great Northern Railway has in preparation now a larger and more comprehensive booklet regarding Central Oregon which will be distributed throughout the East as soon as it can be taken from the press. The distribution of booklets is but one of the means we will use to attract settlers into Central Oregon. Other methods which have been used to advantage in the East, such as the display of samples of agricultural products raised in Central Oregon contained in an exhibit car to tour the Eastern states, as well as permanent agri-

cultural shows in some of the larger cities, will be used.

We anticipate that the settlement of Central Oregon will be comparatively rapid, and will be a repetition of the experience of the Great Northern Railway in populating the prairie land lying along its main line in Montana. For years the broad prairies stretching to the north and south of the Great Northern Railway in Montana were considered of practically no value for farming purposes. Today, filings are being made on Government homestead lands in the United States Land Offices at Great Falls and Glasgow, at the rate of about three thousand per month. Three hundred and fifty steam plowing outfits have been shipped into that region since January 1, 1910.

If this experience can be repeated in Central Oregon, it will be but a matter of two or three years before the vast stretches of untilled prairie land in Lake, Klamath and Crook Counties will be converted into waving grain fields, and comfortable farm homes.

Fifteen years ago, the lands in the Big Bend country of Washington, along the main lines of the Great Northern Railway were in the same primitive condition in which much of the land in Central Oregon can now be found. Today, millions of bushels of wheat are shipped from this section. This can be repeated in Central Oregon, and we will do our utmost to bring about this much desired result.

S. J. Ellison,
General Passenger Agent.

FRUIT Western
Soft Pine.
Light, strong
and durable.

"Better Fruit"
subscribers
demand the
"Better Box."

BOXES

CAN MAKE TWO CARLOADS DAILY

WASHINGTON MILL CO.

Wholesale Manufacturers

Spokane, Washington

FRUIT BOXES

"Larch" Apple Boxes and
Strawberry Crates our specialty

BUILDING MATERIAL

We carry a complete line. Lumber, Shingles, Lath, Plaster, Cement, Lime, Sash and Doors, Brick, Roofing, Building Paper, etc.

We solicit your patronage

Bridal Veil Lumbering Co.
Hood River, Oregon

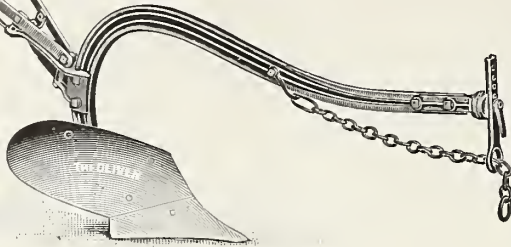
OLIVER'S SPECIAL ORCHARD PLOWS

No. 7 V

Write for
Circulars or
call on your
nearest dealer

Handles and
Clevis
Adjustable

Chilled or Steel



Showing plow
from rear, as if
at work among
trees, wheel
inside of
landside line.
Hub of wheel
does not project
to strike trees.
All levers down.
Third base
can easily be
attached.

No. 17 Two or Three-Furrow Gang



Oliver Chilled Plow Works

Portland, Oregon

South Bend, Indiana

San Francisco



Which Wagon Would You Choose

This letter from Guy L. Shaw, of Beards town, Ill., explains these two photographs: "Enclosed find photograph of a Davenport Steel Wagon and an ordinary wooden wagon—exactly how they looked after doing the same work, over the same roads, with the same loads."

Mud does not stick to Davenport wheels—but that's only one of the reasons why you should choose

The Davenport Roller-Bearing Steel Wagon

Roller bearings mean 30% to 50% lighter draft. Guaranteed to carry 5,000 pounds. Gears solid steel, trussed like a bridge. Steel wheels, strong spokes, forged into hubs and hot-riveted to tires. Nothing to shrink, rot or work loose. Oil without removing wheels. One Davenport lasts a lifetime. Don't buy any wagon till you write us. Be sure to ask for free

Davenport Wagon Co.,
Davenport, Ia.



SPECIAL SPRAYING OUTFITS FOR WEST-ern Growers.—Along with the lead they have taken in the production of fruit, the enterprising growers of the Coast have undoubtedly "set the pace" in many other things as well, related in a general way to the fruit industry. Spraying, for example, had been carried on in a desultory, half-hearted way by many fruit men in the East and South, but it remained for the hustling growers of the Pacific Coast to "get together" and show what could be done when every man sprayed, and sprayed thoroughly. Many were the trials of these men, however, in securing outfits that could be used in their high altitudes. A great proportion of the machines in use in the big orchards of the West are made in the East, and it seemed to take some of these manufacturers a long time to find out that a spray pump that would operate successfully at Hutchinson, Kansas, for instance, might fall down dismally when taken up several thousand feet, where the atmosphere is more rare and the pressure consequently lighter. One of the first of the manufacturers to fall into line and produce machinery adapted to the use of Western growers was The Deming Company, of Salem, Ohio, whose active efforts, combined with those of its

agent, Crane Co., have been the means of placing scores of machines in the great orchards up and down the Coast States. This concern has succeeded in producing a gasoline engine power sprayer that will work efficiently in high altitudes, and has also designed a hand sprayer capable of developing high pressure with the least effort on the operator's part. Both outfits are made according to the Deming high standard of excellence and



are giving the best of satisfaction. Their power machine, the "Premier," is illustrated herewith.

The well-known Bordeaux nozzle and the Demorel nozzle, an improvement on the Vermorel introduced more recently, are popular with fruit men everywhere, and are illustrated in the company's handsome new 32-page catalogue. This attractive book has also a folded spraying calendar and chart and is mailed free to all who apply for it, either to the home office of The Deming Company, 743 Depot street, Salem, Ohio, or to any of the Coast branches of Crane Co.—Portland, Seattle, Spokane, Tacoma, San Francisco or Los Angeles.

WHITEWASH FORMULA.—Take half a bushel of unslaked lime and slake it with boiling water, covering during the process to keep in the steam; strain the liquid through a fine sieve or strainer and add to it a peck of salt, previously dissolved in warm water, three pounds of ground rice boiled to a thin paste and stirred in while hot, half a pound of Spanish whiting, and one pound of clean glue, previously dissolved by soaking in cold water and then hanging over a slow fire in a small pot hung in a larger one filled with water. Add five gallons of hot water to the mixture, stir well, and let it stand for a few days covered from dirt. It should be applied hot, for which purpose it can be kept in a kettle or portable furnace.

ORIGIN OF PEARSON CEMENT COATED Wire Nails.—Wire nails were invented and first used in Belgium and France, and were known throughout the world as "French" nails. They were so expensive that their consumption was very limited. In the early 80's some American manufacturer, by the invention of modern machinery, so greatly reduced the cost that their introduction into the United States was successful. It was soon discovered that although in a dozen ways they were a great improvement over iron and steel cut nails in common use that there was one serious fault, and that was lack of holding power—adhesive resistance. A New England inventor conceived the idea of covering wire nails with a composition that would cement them into the wood in which they were driven, but labored for many years before he finally found a combination of vegetable gums and chemicals that would produce the results desired, and several more years before he found the correct method of fusing and properly putting the combination on the nails. The final results of

HARVEY BOLSTER SPRINGS

Soon save their cost. Make every wagon a spring wagon, therefore fruit, vegetables, eggs, etc., bring more money. Ask for special proposition. Harvey Spring Co., 751-17th St., Racine, Wis.



FREE TRIAL TO YOU

CLARK'S CUTAWAY TOOLS

LESS WORK

Drawn by two medium horses.
Will cut 28 by 20 acres or double-cut 15 acres in a day.

Will move 15,000 tons of earth one foot in a day.

Runs true in line of draft and keeps the surface true. All other Disk Harrows have to run in the half lap.

Has Improved reinforced main frame, and improved standards.

Don't be deceived by poor imitations or infringements.

There's only one original "Cutaway" and it's Clark's.

Saves time. Saves labor.
Saves money.

BIG CROPS

Crops increased 25% to 50%.
Better Grain, better Hay, better Fruit.

Takes place of Plow and Harrow.

Jointed Pole takes all the weight off the horses' necks.

We make 120 sizes and styles of Disk Tools.

Every machine fully warranted.

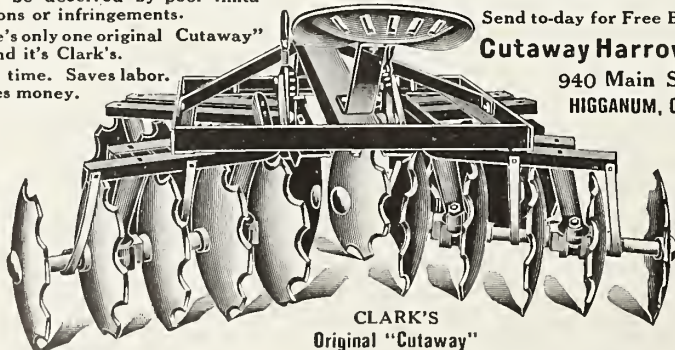
Thousands in use and giving satisfaction.

If your dealer won't supply you, we will.

Send to-day for Free Booklet.

Cutaway Harrow Co.

940 Main Street
HIGGANUM, CONN.



CLARK'S
Original "Cutaway"

Mitchell, Lewis & Staver Co., Western Agents, Portland, Oregon



Deming Sprayers Busy Everywhere

You need not look far, this time of the year, to find why Deming Spray Pumps are so popular with fruit growers who know the fine points of the spraying game. Watch them at work wherever you will, you cannot help being impressed with the wonderful regularity with which they operate—a noticeable absence of that “stopping for repairs” that fills so much of the program of a day’s spraying with some outfits. Deming Outfits, both hand and power, are noted for the thoroughness with which the spray is forced into every part of the tree.

DEMING SPRAY PUMPS

Are making new records for themselves in big orchards everywhere this summer. In purchasing additional outfits or in planning your work for next season, don’t fail to give Deming Spray Pumps due consideration. Call at our nearest store and see them, or write for particulars.

We offer you more than twenty styles, hand and power, of which the outfit illustrated herewith (our Fig. 633) is a splendid type

TWO OF THE BEST NOZZLES YOU EVER SAW

We make a special point of our nozzles, particularly the “Bordeaux” and “Demorel.” The nozzle is always the “business end” of the outfit and Deming Nozzles are made to satisfy the demands of the most critical growers. Order Deming Spray Pumps and Nozzles from your hardware or implement dealer, or direct from us if he doesn’t handle them. OUR 1910 SPRAY BOOK WILL INTEREST YOU. IT’S FREE—WRITE.

The Deming Company, 743 Depot Street, Salem, Ohio

Manufacturers of Spray Pumps and Nozzles, Power Pumps for Irrigation and Water Supply, Hydraulic Rams, Hand and Windmill Pumps, etc.

CRANE CO., Pacific Coast Agents, Portland, Seattle, Spokane, Tacoma, San Francisco

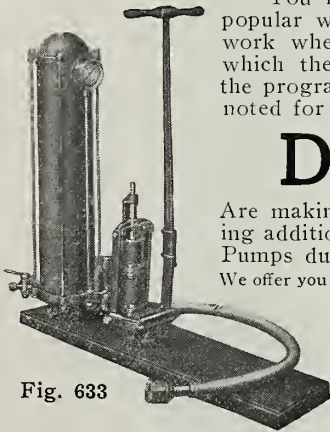


Fig. 633

ORCHARDIST SUPPLY HOUSE

FRANZ
HARDWARE CO.

Hood River, Oregon

HEADQUARTERS FOR CENTURY SPRAY PUMPS

Hose, Nozzles, First-
class Plumbing Supplies

C. F. SUMNER

Successor to Norton & Smith

HOOD RIVER, OREGON

his efforts, as determined by government experts, is as follows:

Ordnance Department, U. S. A.—Reports of mechanical tests made by the United States testing machine at Watertown Arsenal, Watertown, Massachusetts, June 30, 1902, and August 5 and 16, 1902, for J. C. Pearson Company. Nails driven perpendicular to the grain of the wood. All nails driven in the same stick.

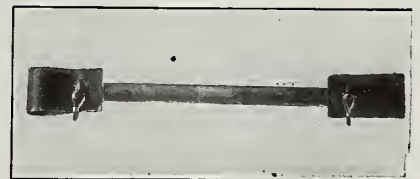
| Test No. | Length Driven (Inches) | Adhesive Resistance (Total lbs.) | Average (lbs.) |
|---------------------|------------------------------|----------------------------------------|-------------------|
| 6d Common smooth... | 1.625 | 100 | |
| 6d Common smooth... | 1.625 | 112 | |
| 6d Common smooth... | 1.625 | 105 | 106 |
| Test No. 12,059— | | | |
| 6d Cement coated... | 1.625 | 214 | |
| 6d Cement coated... | 1.625 | 218 | |
| 6d Cement coated... | 1.625 | 247 | 226 |
| Test No. 11,993— | | | |
| 8d Common smooth... | 2.00 | 146 | |
| 8d Common smooth... | 2.00 | 228 | |
| 8d Common smooth... | 2.00 | 192 | 189 |
| Test No. 12,044— | | | |
| 8d Cement coated... | 2.00 | 322 | |
| 8d Cement coated... | 2.00 | 318 | |
| 8d Cement coated... | 2.00 | 309 | 316 |

The above is conclusive evidence that the claims made for Pearson nails are fully warranted by the result of this test, as it will be observed that the holding power is more than twice as great as that of the common kind. Strength in shipping packages is always a requirement, so naturally the first people to adopt the Pearson nails were box makers, fruit packers, etc. Today no up-to-date box maker would consider the use of any other than the Pearson nails any more than the navy would consider building wooden battleships. The use of Pearson nails in shipping packages insures their arriving with contents intact at distant markets, safeguards against claims for reeoperation, pilfering from cases in transit, breakage, and all the losses due so often to poor nailing. On some commodities—for example, boots, shoes, hats, bottled liquors, eggs, etc.—railroad tariffs stipulate that the cases shall be nailed with cement coated nails on penalty of otherwise being charged a higher rate of freight. Not only in crates and boxes is strength desirable, but the great holding power of Pearson nails is just as advantageous for other uses. For putting on house siding so it will stay flat and tight, for nailing on shingles so that they won’t warp or blow off, for laying floors that will neither spring nor squeak, for putting up house frames that won’t topple over or blow down, and, in fact, for practically every use to which nails are put, Pearson nails are superior to any

others. While the Pearson Company makes no claim that its nails are absolutely rust proof, it is a fact that when openly exposed in comparative tests they will resist the effects of moisture from twenty to fifty times longer than uncoated nails. But it is when in use that the non-rusting quality is decided evident. There is more coating on the nails than is actually necessary for holding power. The heat caused by the friction of driving softens the coating, and the surplus is forced toward the head of the nail, completely closing the aperture and absolutely preventing the entrance of moisture between the nail and the wood. The life of the Pearson nails will be twice as long as that of uncoated nails under equal conditions. Strange to say, although these nails cost considerably more to manufacture, they are always sold at the same price as the common kind. They are being used almost exclusively by box makers, fruit and salmon packers, etc., and are rapidly being introduced for general purposes. They are for sale by up-to-date hardware dealers everywhere.

It does not pay to bark or bruise your trees. Buy

SMITH'S WHIFFLE TREE FENDER'S



Sent to any address on receipt of
75 cents. Send today.

C. H. SMITH Freewater, Oregon

Mr. C. H. Smith, Freewater, Oregon:

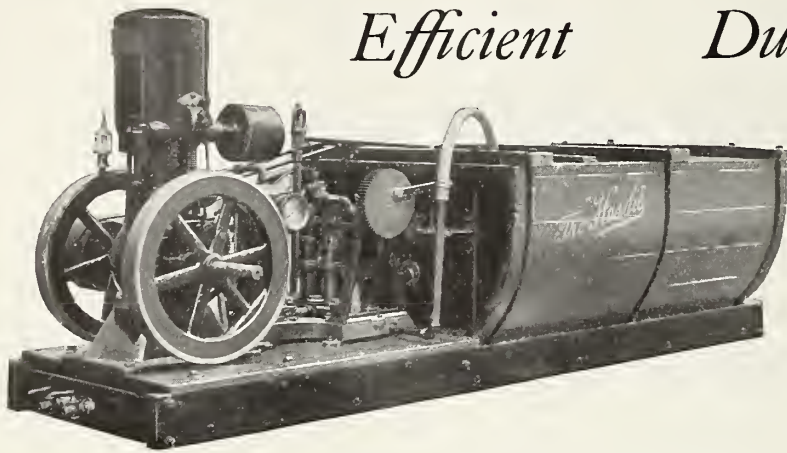
Dear Sir: I consider your whiffletree fender a big step in the right direction for the protection of nursery stock and orchard trees. I can cheerfully recommend this as a valuable device.

Very truly yours,

W. S. Thornber,
Horticulturist at Agricultural Station
Pullman, Washington

The Hardie Triplex Sprayer

Efficient Durable Simple



NOTHING
TO WATCH
BUT THE
SPRAY

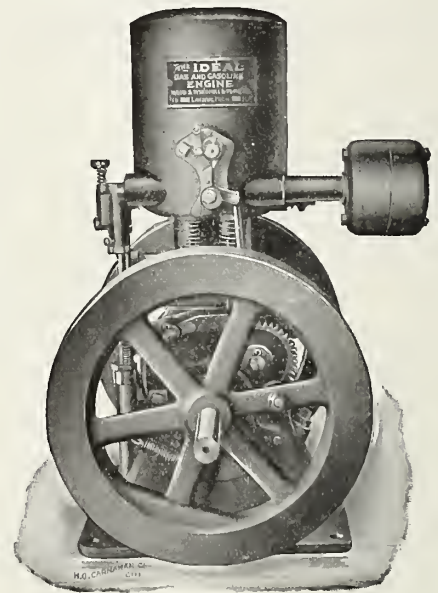
OUR 1910 model Triplex will suit you; will suit you in efficiency, in simplicity, in pressure, in capacity and in general makeup. Our TRIPLEX PUMP gives you an even continuous pressure, be it high or low, as desired. Our Rotary Agitator gives thorough agitation and our Ideal Engine sufficient power.

On all Hardie Power Sprayers we use Our

IDEAL ENGINE

WE use this engine as it is compactly built, has no extra water or gasoline tank and is built for hard continuous service. The cooling system is the most practical of any.

No Tank No Fan No Freezing

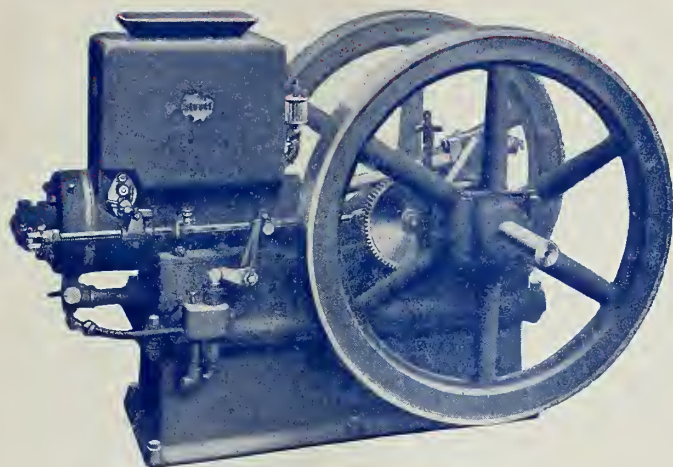


Our complete catalogue giving prices of twenty different styles of hand and power sprayers, engines, nozzles, etc., is yours for the asking

The Hardie Mfg. Co.

Hudson, Michigan

22 Front Street, Portland, Oregon



STOVER

GASOLINE ENGINES

Now Built in "Hopper Cooled" Styles

SIZES 1, 6, 8, 10, 12, 14 AND 16 HORSEPOWER

MORE SIMPLE THAN EVER

Fruit growers and all users of portable pumping outfits will be pleased to learn that the Stover people have gotten out a very superior type of hopper cooled gasoline engine in the horizontal style. The hopper cooled engine is especially adapted to portable pumping service, it effects a saving of the room formerly occupied by a cooling tank and greatly reduces the weight of the outfit. Under ordinary conditions hopper cooled engines will never overheat. No troublesome cooling tank and leaky hose connections with this engine—nothing to cause trouble. Simple and easy to operate.

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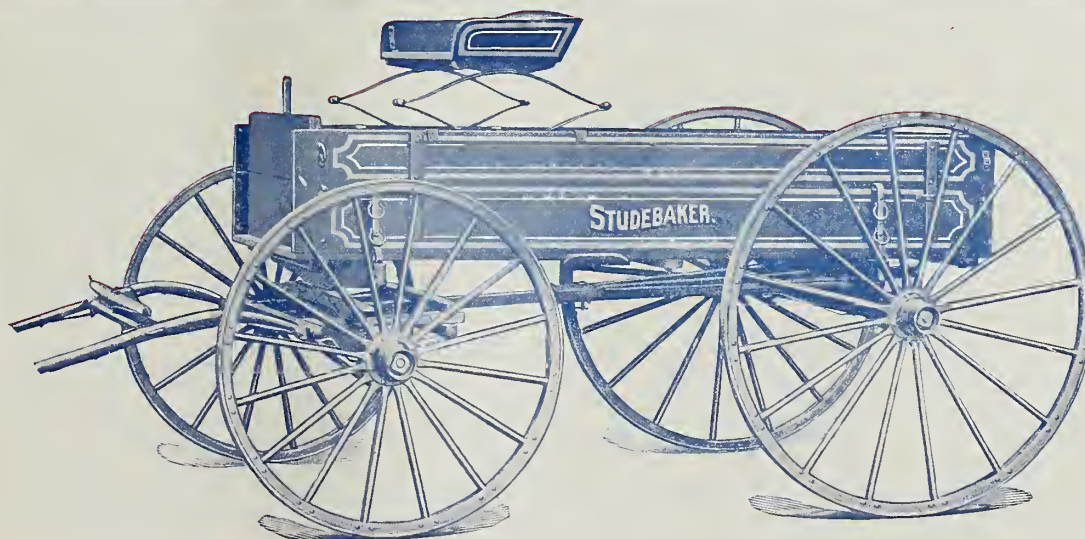
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